COAL AGE

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You Can't Fight if Your Claws Are Trimmed

SENATOR CALDER calls on the coal industry to correct unfair practices, that is, practically to make fair prices for the public, but the public has decided that combination is illegal and so has trimmed the claws of the coal industry. No muzzled dog can put up a valiant defense of his master. No industry forbidden to combine can resist the irregular action of certain of its members. Can the coal operators restrain the action of bellhop speculators who this year invaded the coal business, and prohibit their fellow producers from dealing with middlemen who will give bellhops opportunities such as these? It cannot prevent irresponsible men from becoming speculators, nor can it hinder them from becoming operators. There are inherent difficulties in the Sherman Act. Designed to hinder those who would use combinations to raise prices, it hinders also those who would use it to lower them. Why condemn the industry for wearing the muzzle that the laws have clapped upon it?

Whether Senator Calder is using petty politics must remain a question. Perhaps his motives are above cavil, but he certainly has chosen an excellent time for his threats. Just as prices are falling from decreased demand and increased supply he and Senator Edge have started a campaign of threats. No better time could be chosen. He is like the youngster who, seeing a tree about to come crashing down under the strokes of the lumberman, calls on it to fall and turns to his companions, declaring "See what I did!" Market conditions are depressing the price of coal and Senator Calder by his widespread threats of nationalization seeks to credit himself with the results of an economic condition with which he had nothing whatever to do. Unfortunately the public, always lacking discrimination as far as coal is concerned, may believe the Senator.

Hydraulicking for Coal

A LITTLE hydraulicking has been done in the Danville district of Illinois in the uncovering of coal, but not much use has been made of the practice elsewhere. Where it has been employed only drift and surface soil have been sluiced, and nothing has been done toward the removal of blasted material.

Only in small degree has the method of removal by water been followed in the iron regions. Hydraulicking seems to have been left entirely to those who were seeking gold or platinum. It would be well if experiments were made to introduce this method of stripping into the anthracite region, although it might be necessary to impound the washed gravel and in places sluice the material through tunnels.

There is a large amount of drift in the anthracite region. The first work could be done in this material and then, with courage born of experience, something might be attempted upon the stratified materials below. Many locations are ill-suited and many not suited in any way to the use of hydraulic stripping. Each location must be judged on its merits, but surely in the length and breadth of the anthracite region are some deposits which hydraulicking might at least assist in uncovering.

Hydraulic stripping is the quintessence of labor saving. Two or three men, nozzle in hand, are seen giving battle to a mountain. By comparison even the steam shovel, yes, even the electric shovel, seem wasteful of labor. Only the expense of raising water for this purpose stands in the way and even that difficulty is not insuperable. It would seem advisable to call in hydraulickers of experience, have them look over the matter and determine what can best be done and how.

The Consumer's Rôle in Stabilization

COAL is like food, in that a certain minimum is always required to maintain life, and further, a large quantity is regularly required to operate industry and the railroads even when business is dullest. Unlike clothes, automobiles and even housing, the country cannot postpone coal buying indefinitely, using the old beyond its usual span of usefulness. It is unfortunately true, however, that the public is temperamental in its buying of coal and either rushes into the market pell mell, as this year, or stays out, eating up stock piles, as in 1919. Both courses are dangerous—for the 1920 coal panic was due to the consumers' refusal to buy in order to meet ordinary needs in 1919, coupled of course with the miners' strike of last November and the switchmen's strike of this April.

Coal is a stranger in the usual and regular market reports, where one may find cotton, copper and money currently listed, yet coal is one of the commodities in which there is trading involving large sums and large tonnages. When coal is quoted in the daily press the statistics are those of high prices and the comment there is far from complimentary to the trade and the industry. One may learn from the financial journals that copper is going down in price, that stocks are large, and that producers are curtailing output. The same may be learned of wheat, flour, cotton and many other basic commodities, but not of coal.

Those who feed market statistics to the public have yet to take up coal and the public has yet to learn to read the signs that could easily be given, for the basic data are available—the signs which would tell them to buy or not to buy, to add to or detract from stocks. Coal is not the only industry that would enjoy a stable market, an even progress in production and distribution, equitable price at all times; but coal cannot enjoy these in any measure until there is more intelligent use of marketing statistics.

The price of soft coal is declining and will continue

on the same path for some time. Will the consumer take advantage of the market and pile up fuel for next January, February and March? Probably not; more likely he will run true to form—having outbid his neighbor this summer and fall he will use his surplus acquired at high price and will forget the coal market until his reserves are very low. Then, *en masse*, he will again rush into the market and create another price flurry.

The producer may know full well that the consumer is not buying when he should be, but he cannot, as does the copper producer, the miller, the textile industry, store his product handy against a future but certain demand. He must close his mine, as he did for more than six months after Nov. 11, 1918, and let his men loaf.

Did consumers of coal, especially the larger ones, but study the market statistics on coal as they do on other raw materials, they would profit, the country be saved such spasms as that of this year's coal shortage and the industry prosper sanely likewise.

Surmising and Seeing

WHAT Dr. Garfield saw in prospect Frank Dumont Smith, of Hutchinson, Kan., has seen in retrospect. But, strange to say, what one prophesied and the other beheld never happened. Nothing extraordinary about that, by the way; those who write about coal prophetically and retrospectively have a way of seeing facts as they are not far more often than as they are.

Frank Dumont Smith, speaking for Governor Henry L. Allen of Kansas at the American Mining Congress, said that the Industrial Relations Court was preferable to arbitration as usually conducted in wage disputes. In such affairs, Mr. Smith said, the employers and employees each named an ex-parte representative and the Government named a third person supposed to represent the people. This third person was an uninformed individual, who could not possibly learn enough in the short time covered by the investigation to make him a capable judge. The representatives of the employers and of employees both knew their mind and invariably soon came to an agreement to give the employees what they wanted and to let the employer pass the cost on to the public. Dr. Garfield foreshadowed that same *dénouement* in the bituminous-wage controversy, but it didn't occur, nor did it happen in the anthracite dispute.

If the truth were known, the employers' representative made up his mind from the first to help the people's representative to see the case as he saw it and to accept the decision of the latter if it were at all reasonable. The mine workers' representative, on the other hand, went to the board determined to get all that the union demanded of him. When he couldn't get it he made a minority report, and the union and the workingmen did all they could to have the majority report laid aside and the minority report accepted.

The decision in both cases lay with the people's representative, the employers' nominee accepting the decision and making it his own. Thus the prognostication of Dr. Garfield and the statement of Mr. Smith were both wrong.

The public usually pays the bill. Mr. Smith is right about that. It is only right that it should, where prices are at the time reasonable and fixed on the past cost of production, as were the contract prices of bituminous at the time of the soft-coal decision and as were circular prices of anthracite when the hard-coal decision was rendered. Spot prices of bituminous coal subsequently went wild, but the increased wage cost was not the cause. The prices were the outcome of a demand that could not be supplied. The circular prices of anthracite, which had been raised to meet the needs of the expected retroactive decision, were such as to meet the situation without unfairness and were not changed.

The Industrial Relations Court, as it is termed—it is really an administrative board and not a court—is doubtless doing a good work. At least rumor so represents. Kansas is quieter than for years. Mining is a more peaceful occupation. But it is not necessary for advocates of the court to misrepresent the facts about arbitration boards.

Exit Alex Howat

OUR reformers are determined that all the evils of the world are reflections merely of wrongs performed, that the weeds which grow in the field of labor are, one and all, the outcome of seeds energetically sown by the sordid hand of capital. As a matter of fact, however, much of the disorder exists because there is someone whose business it is to creat it. Such a man was Alex Howat, district president, in Kansas, of the United Mine Workers of America. He was the storm center in that state, Oklahoma and Missouri.

Possibly there may occasionally have been some shadow of cause for the disorders in those states, but it is generally recognized that the reason why there were in Kansas thirty-four coal-mining strikes in some thirty months, of which thirty-three were in violation of contract, was because of Alex Howat and his perpetual troublemaking. He was as a thorn in the side of the whole union, of the Kansas operators and of the officials of the state in which he lived and plotted.

At length the Industrial Relations Committee has put its hand upon him, and things are quiet. Unfortunately, part of his evil work still remains. The industrious workers have long ago left the state or the industry, convinced that it could not offer any chance to men who were willing to work. The men who were left were in a large proportion men of that kidney who live to "argify" and quarrel.

Like with like, a mine which has eighty per cent of loafers tends always to reach one hundred per cent, and the mine with eighty per cent of real workers tends to eliminate the twenty per cent of idlers. George Wolfe's estimate, at the American Mining Congress, that 85 per cent of the men in a mine are industrious and 15 per cent are of a worthless type, confirmed as it was by Carl Scholz, is nevertheless true of only some mines—the non-union in particular. Certain of the more unfortunate mines have suffered from a reversion of the percentage numbers. Slowly the industrious and intelligent have left for happier climes and steadily those whom no one would have have drifted in—the derelicts of society.

We trust that Kansas has started anew and is about to regain its industrious mine workers, or seek them in the other industries of the state. The principal troublemaker is removed, temporarily at least. Law and order may, in his absence, plant their feet firmly once more, and those who meanwhile have known peace and learned the advantages of steady toil may make Alex Howat put on jeans and double himself to work if he tries to raise trouble again in the Sunflower State.

Methods of Operation Followed at the Largest Anthracite Stripping

A Deposit of 9,000,000 Tons of Coal Was Discovered by Accident—Development Has Been Made by Both Stripping and Underground Mining—The Largest Pit Will Ultimately Be Somewhat Over a Mile Long and a Quarter of a Mile Wide

By Dever C. Ashmead
Wilkes-Barre, Pa.

About forty years ago an outcrop of the Buck Mountain coal bed was discovered on the top of Locust Mountain, near the city of Shenandoah, Pa. In this a small slope was sunk, but practically no workings were driven off it, and it was abandoned shortly afterward. In 1910 the Girard Estate, as it did not have at that time sufficient water in its reservoirs, sunk a borehole in this locality to obtain a further supply. Instead of finding water, coal was discovered. Another hole was started for water, but again coal was found, this time two beds of it. It was then deemed advisable to test the deposit and the search for water was discontinued.

As a result, by means of boreholes and test pits the Girard Estate proved the value and extent of the coal deposit that it had discovered on the top of the mountain. It was found that about 9,000,000 tons of coal was in sight. This estimate was later proved to be a trifle too large. In this work the estate employed ten section lines, some of which are shown in the accompanying illustrations.

Work Was Commenced in the Year 1913

B. Snyder, Jr., obtained a lease for the property as soon as it was offered, and turned it over to the Locust Mountain Coal Co., of which he was then the vice president and general manager. On March 17, 1913, work was commenced upon this coal deposit, but Mr.

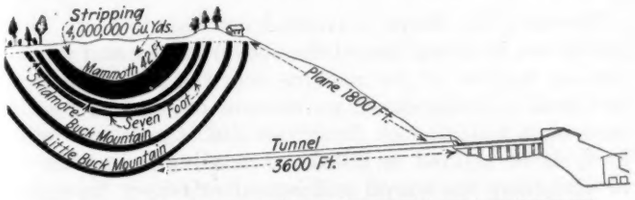


FIG. 1. IDEALIZED CROSS-SECTION OF PROPERTY
A tunnel which extends inward 3,600 ft. drains the lowest point in the Little Buck Mountain bed, the lowest of all the seams. Here, as often happens, the top of the mountain is occupied by a deep syncline.

Snyder was killed on June 1 of the same year. Development has, however, been continued according to his ideas. One interesting fact that might well be noted in passing is that when the company opened the property and drained off the water filling the old slope, which had been driven forty years before, it found that the timbering was in as good condition as when first placed.

Locust Mountain rises from the valley to a height of 500 ft. On its top lies a level plateau about a mile wide which extends its full length. The cross-sections already referred to revealed that the coal lay in a different basin from that existing in the Shenandoah Valley. Furthermore, it was proved that the bottom of the basin in the mountain was above the bottom of the valley. This made it possible to drive a tunnel that would reach the lowest point in the basin, and so drain the whole mine.

Five Beds Aggregating Seventy-Five Feet

Five workable beds of coal were found; namely, the Mammoth, Skidmore, Seven Foot, Big Buck Mountain and Little Buck Mountain. The Mammoth bed in this locality is about 42 ft. thick; the Skidmore 10 ft.; the Seven Foot about the thickness its name implies; the Big Buck Mountain 10 to 12 ft. in thickness and the Little Buck Mountain about 6 ft. thick. Fig. 1 shows in general the relationship existing between the various beds, as well as the mountain and the valley. It also shows how the drainage tunnel taps the lower bed. This drawing is not to scale but is rather a picture intended to give the general "lay of the land."

In determining the system of mining to be followed in this property a decision had to be reached as to what portion of the property could be stripped and what portion worked by ordinary underground-mining methods. Furthermore, the fact that the lease expires in 1928 had to be taken into consideration, as it was, of course, desirable to move, if possible, the whole of the 9,000,000 tons of coal by that time.

It was comparatively easy to determine that the three upper beds in the eastern basin should be stripped and that the lower measures should be mined from below. It also was easy to decide that some of the beds in the western basin should be stripped, but a portion of this second basin lay in such shape that it was extremely difficult to determine which would be the more economical, stripping or underground mining.

Although no stripping has been done on the Little Buck Mountain bed, Fig. 2 shows the outcrop of this measure. This illustration is presented to show the full extent of the coal measure, as it is the lowest coal bed in the series. Fig. 3 is a surface map showing the extent of the strippings, all of which except Nos. 4, 5 and 6 are either now being worked or have already been finished.

Biggest Anthracite Stripping in World

The East Basin stripping probably is the largest of its kind in the world. If it is not the largest now it soon will be. The present excavation is about 4,000 ft. long and half a mile wide at its widest point. Fig. 4 gives some idea of the size of this pit. When it is considered that what is here shown is only the preliminary stage it can be realized that ultimately the stripping will be little short of stupendous. The final strip

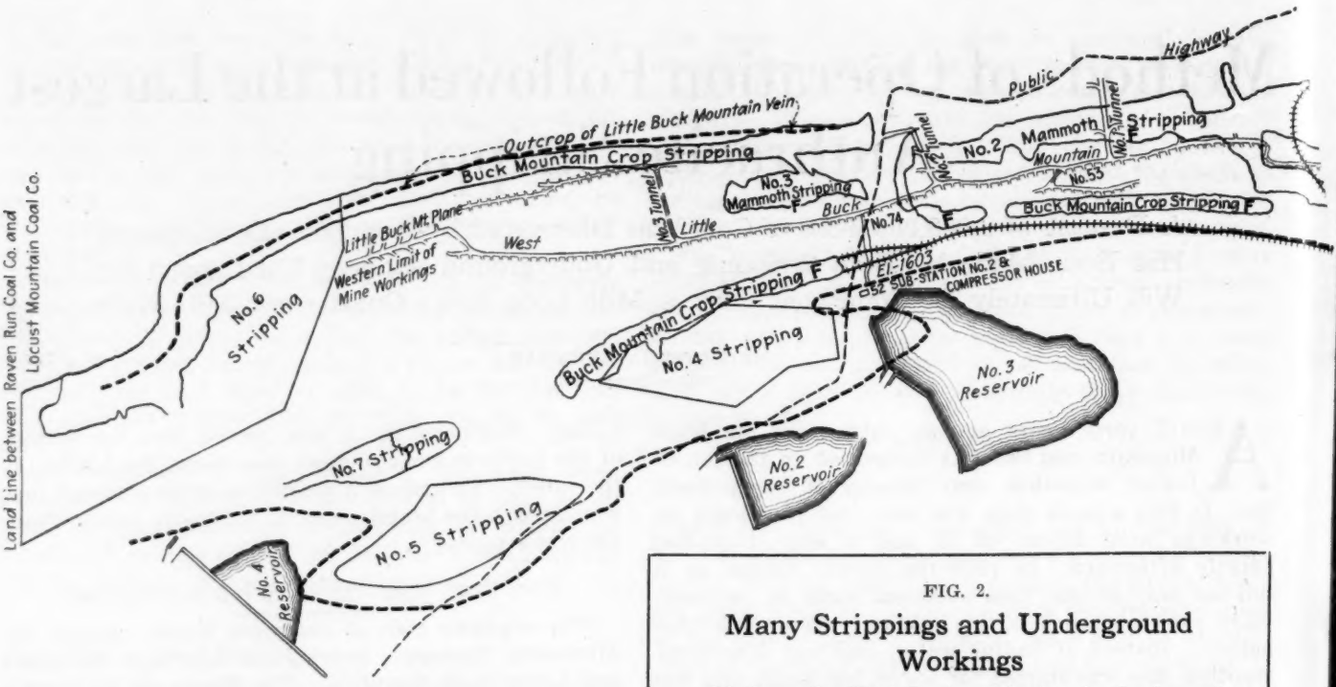


FIG. 2.

Many Strippings and Underground Workings

Of these the East Basin stripping is the largest. Strippings Nos. 5, 6 and 7 were described in article which appeared in the issue of Nov. 18.

pit will be 3,000 ft. longer than it is at present, or 7,000 ft. in all, and will go to a depth of 250 ft. Yet this pit is only a portion of the area that remains to be excavated on Locust Mountain.

Some further conception of the amount of work already performed, as well as that yet remaining to be done, can be gained from the three sections of the coal measures shown in Figs. 5, 6 and 7. These reveal that at present a large amount of the Mammoth bed is yet to be removed, but they also show that to a large extent the cover over this measure has already been stripped. Where the overburden has not yet been removed it has been blasted loose, and by the time winter sets in a large portion, if not all of it, will have been loaded and hauled away.

From Fig. 7 it will be seen that only a comparatively small portion of the Seven Foot and Skidmore beds has been stripped, leaving a tremendous tonnage still to be handled. The 3,000-ft. extension to the eastward beyond the limits of the present pit contains none of the Mammoth bed, but only the lower measures.

Water Will Eat Out Pipe in Three Days

Cross-section, Fig. 7, shows a rock tunnel driven from the workings in the Big Buck Mountain bed to prove the coal in the overlying deposits. At the present time this tunnel is exceedingly valuable, as it is used to drain the main stripping. Pumps are required in this pit only to force the water from local dips to this tunnel, through which the water flows into the mine workings and thence to the outside. Incidentally this method of drainage saves much besides power costs, as the water is so acidulous that it will eat out a 2-in. pipe line in three days.

It will be noted in the illustrations that many other strippings exist besides that constituting the main pit, but as these have nothing to do with the big operation, no consideration will be given them here; instead they will be discussed in a later article which will deal with the underground mining, of which they really form a part.

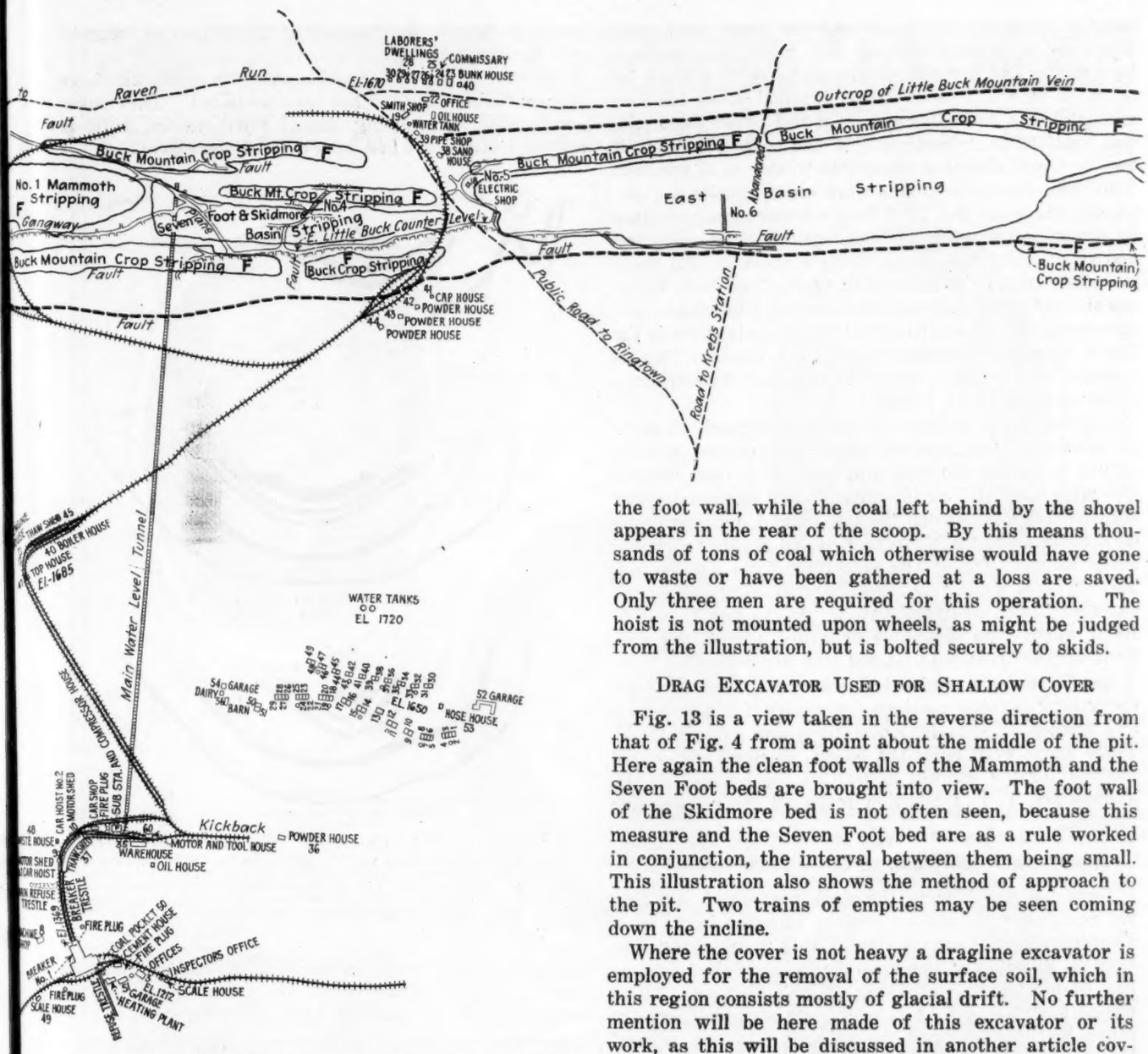
On the southern side of the pit the beds are much more steeply inclined than they are along the northern border; in fact on the southern side they are almost vertical, as may be seen in Fig. 8. This illustration gives a good idea of the present depth of the excavation on this side of the stripping. The vertical or almost vertical rocks here shown are the foot wall of the Seven Foot bed. The man standing at the base of the "cliff" is Mr. Brown, superintendent of the stripping operations, and from his relative size can be obtained a graphic idea of the height of the cliff. Approximately in the middle of the picture it will be noted that some of the coal has been left. This was done because of a local weakness in the foot wall. On the return trip of the shovel this coal will be removed.

Guard Shovel Men by Keeping Them from Bank

Formerly the shovel traveled from west to east. This procedure, however, placed the shovel runner and dipper man on the side of the machine near the almost vertical foot wall and introduced an element of danger, for, in case of a fall of rock from the cliff, these men were likely to be injured or killed. Accordingly, in order to protect them the shovel will hereafter travel from east to west. This will place the men on the side away from the foot wall, where they will be protected by the shovel itself in case an accident of this kind should occur.

At one point a 70-ton Bucyrus shovel is now loading coal from the Mammoth bed into mine cars. In this operation a locomotive can handle a trip of ten loaded cars from the pit. These cars are of 5-cu. yd. capacity and may be so loaded as to hold about five tons of coal.

Another type of shovel employed in this operation is a 35-B Bucyrus caterpillar electric machine. This shovel is exceedingly valuable in this kind of work, for it can go almost anywhere and travel with fair rapidity. In three days one of these shovels was moved from the Seven Foot and Skidmore stripping, shown in Fig. 3, to its present position almost at the extremity of the large strip pit. This machine is at present working on



the rock intervening between the Mammoth and Skidmore beds.

Fig. 11 shows an interesting operation wherein a piece of underground machinery is being employed on the surface. After a steam or an electric shovel has loaded all the coal it can reach it naturally leaves behind it an appreciable amount of broken material that it cannot pick up. Unless some method is provided for reclaiming this coal it will be wasted. In this instance a scraper has been employed for gathering up this coal, and Fig. 11 shows this machine in operation. A steel pin or post bearing a snatch block is set up, and the rope attached to the scraper is passed through the sheave and thence to the hoisting engine. This acts as a tail rope, while the main rope attached to the bail of the scraper is led direct to the hoist. By means of this outfit it is possible to clean all the coal from the rock bottom.

The coal gathered by this scraper is dragged to a point near the hoisting engine and left in a pile, so that the shovel upon its next trip will be able to pick it up and load it into mine cars. To the right of the illustration may be seen how thoroughly the scraper cleans the foot wall, while the coal left behind by the shovel appears in the rear of the scoop. By this means thousands of tons of coal which otherwise would have gone to waste or have been gathered at a loss are saved. Only three men are required for this operation. The hoist is not mounted upon wheels, as might be judged from the illustration, but is bolted securely to skids.

Drag Excavator Used for Shallow Cover

Fig. 13 is a view taken in the reverse direction from that of Fig. 4 from a point about the middle of the pit. Here again the clean foot walls of the Mammoth and the Seven Foot beds are brought into view. The foot wall of the Skidmore bed is not often seen, because this measure and the Seven Foot bed are as a rule worked in conjunction, the interval between them being small. This illustration also shows the method of approach to the pit. Two trains of empties may be seen coming down the incline.

Where the cover is not heavy a dragline excavator is employed for the removal of the surface soil, which in this region consists mostly of glacial drift. No further mention will be here made of this excavator or its work, as this will be discussed in another article covering the underground-mining methods.

In addition to the main stripping a number of smaller pits are being excavated. Referring to Fig. 3, it will be noted that the strippings Nos. 1, 2 and 3 Mammoth have been completed. As the Skidmore and Seven Foot beds are too deep at this point to warrant stripping, their contents were recovered by underground mining.

On the map a number of strip pits will be noted, and many are marked Buck Mountain strippings. As these relate entirely to the underground workings, they will not be taken into account here, but will be dealt with in a future article.

Most of Overburden Removed in Summer

As many of the shovels and other pieces of machinery employed in this operation are actuated electrically, the company has placed power lines around the different pits, so that they can be readily reached by cables. Several of the illustrations in this article show these lines close to the upper rim of the pit.

The work has been so planned that a large part of the removal of the overburden is done during the

summer months. In the winter the frost on Locust Mountain penetrates several feet below the surface. Last winter the ground in this pit froze to a depth of as much as 8 ft. Such frozen ground is as hard as rock and has to be blasted. On the other hand, the coal must be shot regardless of the season, so that it may be mined almost as cheaply in winter as in summer.

In order to carry on this work eight shovels are employed; three are No. 18-B Bucyrus machines, operated by steam and fitted with buckets of ⅞ cu.yd. capacity, and two are 35-B Bucyrus electric shovels. All these machines are of the caterpillar type. Two 70-C Bucyrus shovels of the railroad type, operated by steam, also are employed. In addition to these shovels there is the 175-B dragline excavator already mentioned. This is supplied with a 125-ft. boom and is operated electrically. It handles a 3½ cu.yd. bucket.

Thirteen miles of track is necessary to reach all parts of operation, and nineteen 20-ton locomotives are required to handle the rock and coal. For coal removal 115 mine cars of 5-cu.yd. capacity are employed. For transporting overburden twenty 8-cu.yd. Kribaw dump cars, fifteen 4-cu.yd. Western Wheeled Scraper cars and forty Koppel cars of the side-dump type are in use. Two Cyclone well drills, one operated by gasoline and one electrically, are employed as well as one Ingersoll-Rand wagon-type blast-hole drill, and seven Ingersoll-Rand tripod drills. About 250 men are employed.

Excellent shops are located near the stripping, where exerything, except castings, necessary for the repair and upkeep of shovels, locomotives and cars is made. These shops even build the booms, dipper handles and buckets for the shovels, as well as the boilers for the locomotives, and in addition make all other necessary repairs.

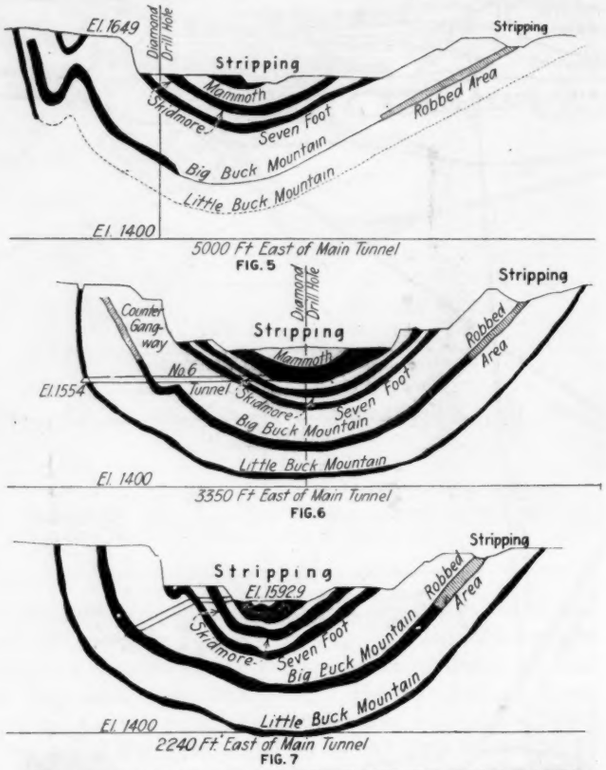
About Half the Coal to Come from Open Pit

Some figures showing the work performed and that yet remaining to be done may be of value in forming a conception of the magnitude of this undertaking. The original estimate of the amount of coal in the basin, as has been already stated, was 9,000,000 tons. About one-half of this will be recovered by stripping and the other half by underground mining. At the present time 815,707 tons of coal have been taken from the large strip pit, and to obtain this tonnage 3,020,364 cu.yd. of rock have been hauled away. To recover the remainder of the coal in this pit it will be necessary to remove 1,065,645 cu.yd. of rock.

Thus far from the Seven Foot and Skidmore strippings 63,454 tons of coal have been recovered, and after the removal of 276,553 cu.yd. of rock 39,046 cu.yd. of overburden still remains to be stripped. The West Mammoth basins Nos. 1, 2 and 3, as shown in Fig. 3, have been entirely stripped, 406,000 cu.yd. of surface being removed and 452,921 tons of coal obtained. Another stripping, known as the Buck Mountain pit, so far not mentioned in this article, but to be taken up in a later one, is located near the western edge of the property. From this 250,000 cu.yd. have thus far been removed and 62,781 tons of coal have been obtained. In this pit 1,173,314 cu.yd. of rock have yet to be removed.

Nothing as yet has been done on stripping Nos. 4 and 5 shown on the map in Fig. 3. No. 4 stripping will produce 60,382 tons of coal and will require the removal of 261,759 cu.yd. of rock and surface drift. Stripping No. 5, on the other hand, will produce 86,688 tons of coal and require the removal of 257,397 cu.yd. of rock and surface material.

In order to present these figures in a somewhat more concise fashion Table I has been prepared. This shows some rather interesting facts. Furthermore, if it is assumed that 4,000,000 tons of coal were available for stripping, this table shows that 2,600,000 tons yet remain, all of which must be procured before the expiration of the lease in 1928.



FIGS. 3, 4 AND 5. CROSS-SECTIONS OF EAST BASIN

Fortune seems to have put the big seams near the surface as if to make stripping easy. Unfortunately, the biggest of all strippers, bigger by far than the Locust Mountain Coal Co., has been at work for millions of years hydraulicking and by glacier removing all the beds, especially those that, like the Mammoth, were near the top of the series.

TABLE I. AMOUNT OF WORK DONE AND TO BE DONE

Name of Stripping	Rock Removed, Cu.Yd.	Rock Remaining, Cu.Yd.	Coal Recovered, Tons
East Basin	3,020,364	1,065,645	815,707
Seven Foot and Skidmore	276,553	39,047	63,454
Buck Mountain Basin	250,950	1,173,314	62,781
West Mammoth	406,000	.....	452,921
	3,953,867	2,278,006	1,394,863
Stripping No. 4		261,759	
Stripping No. 5		257,397	
Total		2,797,162	

It is estimated that 553,000 tons of anthracite are recoverable from all the several deposits outside of the Seven Foot and East Basin, so that if the output of the strippings is to equal 4,000,000 tons, 2,000,000 tons of coal still have to be removed from the large East Basin.

At the present time this coal is being produced at the rate of a little less than 500 mine cars a day, and as each car of coal as normally loaded contains slightly less than four tons, the rate of removal approaches 1,800 tons a day. On a single day, when I was present at the plant of the Locust Mountain Coal Co., 500 mine cars were loaded. This broke the record.

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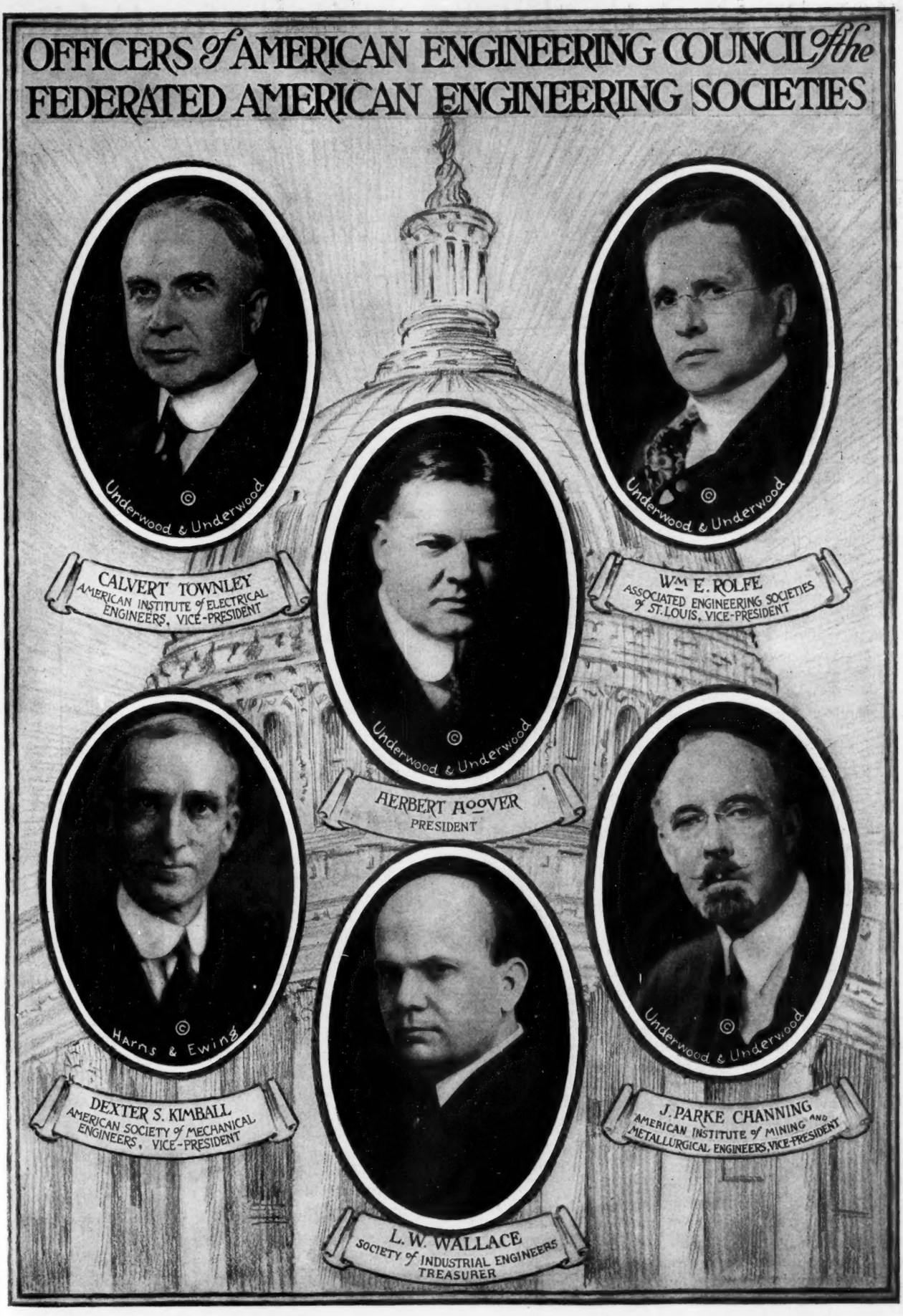

How to Test the Fitness of Coals for Coking

To Determine the Suitability of a Coal for Coking Purposes It Is Necessary to Examine and Test It Thoroughly, Preferably at the Mine—For Such Testing a Hand-Operated Jig Is Almost Invaluable

By G. H. Elmore
Philadelphia, Pa.

THREE prime requisites of a good metallurgical coke such as would be suitable for use in modern blast furnaces may be stated, without reference to the order of their importance, as low ash, low sulphur and suitable structure.

In determining what are the possibilities of obtaining any of the three items mentioned complete reliance cannot be placed on a mere chemical analysis or on a visual examination of the coal. This is because both ash and sulphur are associated in coal with the volatile matter and fixed carbon in such an unlimited variety of ways that it is practically impossible to lay down definite invariable rules.

Experience is showing that not only are there limits to the percentage of slate and sulphur that can be removed from coal but that with some coals the beneficiation that can be obtained is so small that it is not profitable to attempt it. Furthermore, where coal is needed for special purposes three products should be obtained from the washery: select coal, middlings and refuse. The second product should be used for boiler or other purposes.

It is the purpose of this article to outline and define the procedure to be followed for accurately determining the adaptability of any given coal to the production of metallurgical coke, and to follow the discussion with an explanation of some simple methods by which the investigation may be pursued and the results confirmed.

Ash Is Present in Four Distinct Forms

Percentage of ash in any raw coal is not indicative of its coking possibilities. The problem does not lie in the quantity of ash contained, but rather in the manner of its association in and with the coal. Generally speaking, ash may be present in four forms:

(1) As well-defined pieces or particles of rock, slate or fireclay, each with relatively high specific gravity and breaking free from the good coal when put through a suitable crusher.

(2) As "rash" and "mother of coal," usually high in ash and of relatively low specific gravity.

(3) In such fine mechanical combinations in the high-ash coal or "bone," that separation is impossible. The specific gravity may lie anywhere between that of the good coal and that of the slate.

(4) As non-combustible matter in the good coal.

By "good" coal is meant that portion of the product of a mine which remains after rock, slate, fire clay, rash and bone have been removed by the best-known means of separation. If this good coal runs low enough in ash to make good coke, this portion of the problem has been solved.

The quantity of ash present in those forms having high specific gravity, whether its amount be 10 per cent or 30 per cent, will not affect the resultant good coal. In such cases difficulties in producing a low-ash washed coal lie wholly in the bone or rash, where the specific gravities come close to that of the good coal.

The economic importance of obtaining low-ash coke for a blast furnace is revealed by the fact that under pre-war conditions, when the cost of raw materials at the large pig-iron-producing centers maintained a definite average relation, each unit of ash in the coke added approximately 20c. per ton to the cost of the pig.

This increase in cost is due to four causes: (1) More limestone is required to flux the increased ash in the coke, with a consequent increase of slag. (2) More coke is required, each unit of ash decreasing the heat value of the fuel. (3 Increased labor is necessary for handling limestone, coke and slag. (4) Decreased daily output of the furnace will result, the high-ash coke permitting less ore to be charged.

Much of the coke used in blast furnaces runs above 10 per cent of ash. If by proper preparation this can be reduced to 7 per cent, the saving for a modern blast furnace, yielding above 500 tons of pig iron per day, easily can be estimated—bearing in mind that at this writing (1919-20) pre-war figures are about doubled.

Investigations Reveal Facts About Sulphur

Not until recently have the investigations made by the U. S. Bureau of Mines,[1] the University of Illinois and other experimenters produced evidence that seems conclusive concerning the origin of sulphur in coal. Briefly stated, these are:

(1) All sulphur found in coal either now is or originally was deposited in organic form, the exact chemical nature of which is not known except that it was extremely complex. The sulphur had its origin in the plants from which the coal bed was formed, and the amount present is easily accounted for when the sulphur content of many known plants and the great quantity of vegetation laid down per unit of thickness of any coal deposit is considered.

(2) A portion of the sulphur found in coal is still organic. The remainder is largely in combination as pyrites of iron and sulphate of lime, the prime agent in this transformation from organic to mineral combination being certain bacteria.

(3) Appreciable quantities of iron pyrite may be present in the form of microscopic crystals.

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[1] "Some Factors That Affect the Washability of Coal," by Thos. Fraser and H. F. Yancey; "Forms in Which Sulphur Occurs in Coal," by A. R. Powell and S. W. Parr; "Sulphur in Coal Geological Aspects," by G. H. Ashley; "Occurrence and Origin of Finely Disseminated Sulphur Compounds in Coal," by Reinhardt Theissen; and "Mechanical Separation of Sulphur from Coal," by J. R. Campbell.

It is evident that no mechanical means can remove such sulphur in coal as is present in organic combination or that exists in such fine particles as to be microscopic. Coal-washing plants are ineffective for this purpose. Only non-microscopic or the coarser iron pyrite is removable by washing.

It is well known that, when crushed, pyrite breaks to cubical form. A portion of these cubes may easily be as fine as flour, these being known to those engaged in coal washing as "flowers of sulphur." Sometimes the sulphur crystallizes in the laminations of the bed in small, thin disks. The practical difficulties encountered in removing these "flowers" and "disks" are great, particularly when large tonnages must be treated. However, these obstacles have to a great extent been overcome. There is no difficulty whatever with the granular and larger portions.

Coke Must Be Cellular, Hard and Strong

A coke of good structure must be of such cellular formation as to be rapidly combustible in the blast furnace, also of the proper hardness and strength to withstand the weight of the furnace burden. Formerly it was held by many operators of furnaces that coke carrying less than 10 per cent of ash could not meet these requirements. This is now known to be an error, as constituents other than ash determine the hardness and strength of this fuel. It also is clearly established that pieces of ash in the form of rock or slate charged to the oven will in the resultant coke form centers from which fractures radiate. These detract from the strength of the coke, cause increased breakage in handling and add materially to the quantity of breeze formed. This emphasizes the necessity for charging ovens only with good coal.

How Coals for Coke Should Be First Tested

Examination of a coal with reference to its availability for coking purposes must begin at the mine. An accurate sample of the coal must be taken and the examination directed by an engineer of experience, with a clear understanding of the elements entering into the problem. It is well known that both the ash and sulphur may vary greatly in different portions of the bed and in different locations in the mine. Consequently several samples should be taken. If the mine is not sufficiently developed, samples should be taken from numerous borings over the entire tract. Each of these samples should undergo a series of float-and-sink tests followed by assays. These investigations should determine:

(1) The highest specific gravity allowable for the good coal. This usually lies between 1.35 and 1.40, although it may vary from 1.25 to 1.45 for some coking coals.

(2) The highest specific gravity allowable for the secondary or bone coal. This usually will be no higher than 1.55.

(3) The degree of fineness to which the sample must be crushed in order to properly free the impurities from the good coal, keeping in mind the economics involved. In most cases it has been found that crushing all the coal to pass a ¾-in. round hole will be ample. However, the accurate determination of this point is vital, and no general rule can be laid down.

(4) The proportionate tonnage of good coal, secondary coal and refuse in each size of each sample.

(5) The assays both of the raw coal and of each product obtained from every size of every sample tested.

Then Follow Jig or Concentrator Tests

With these results in hand and properly arranged, a fairly accurate idea may be obtained as to the impurities that can be eliminated, as well as how fine the coal should be crushed. These results should be confirmed by treating a much larger sample either on a hand jig of the type used in the Missouri, Kansas and Oklahoma zinc fields, or a full-sized coal-washing jig, or, if the coal must be crushed extremely fine, on a suitable washing table. If possible, these larger tests should be conducted at the mine by one thoroughly familiar with the art.

It is important that these trials be conducted at the mine, for nowhere else can a sufficient supply of raw coal be readily obtained such as will permit experiments and investigations to be conducted until the problem in all its phases has been solved. If the proposed investment is large, careful preliminary investigation is imperative, and in that event the owner of the property, through his selected engineers, should carefully test the merits of the various means of coal washing to be found in use in the many coal fields of this country. He should then proceed to erect at the mine a full-sized machine with the necessary crushing equipment, feed bin and feeder, to operate on a thoroughly commercial scale. This will give positive information on a vital point involved in the building of a full-sized unit and the flow sheet that should be followed.

Testing Plant Should Produce Fair Tonnage

The output of an experimental plant of this kind should be from forty to sixty tons of washed coal per hour. This affords ample tonnage for coking tests on a large scale. Regular blast-furnace runs with this coke may then be made and confirmed as many times as may be desired. If such a test proves a failure, another machine may be substituted and the test repeated.

The main detail to be noted is this: If the results obtained by a testing plant of the character outlined are satisfactory, and if the same machines are used in the construction of the contemplated plant, it can be built with confidence, and when put in commission the disappointments that have attended many operations of this kind will be averted.

The importance of good engineering in all other departments of the washery should not be overlooked. The crushing, elevating, conveying, transmission and power applications are each vital elements in a successful plant, the crushing problem sometimes being quite difficult. After all is said, however, it is the washing machines alone that make the separation of the impurities from the good coal, and they are, therefore, the real heart of a coal-washing plant.

Four Ways of Disposing of Middle Product

Reference has been made to the intermediate, or secondary, high-ash coal that is found in most mines. This material may be disposed of in four ways, which one of the four is adopted being a matter of great importance:

(1) The separation may be made in such a manner that the high-ash, or intermediate, coal will go with the good coal. This increases the ash, and usually the

sulphur, in the resultant coke, and should not be considered except under compelling conditions.

(2) It may be thrown out with the refuse. This means a waste of real fuel value, and the time will come when such a procedure will be prohibited by Federal law, for in the last analysis it is nothing short of a crime.

(3) The separations may be so made in the washing plant that the lighter, or low-ash, "bone" will go with the good coal, and the heavy—high-ash—portion with the refuse. This is a compromise between the two evils, and is not a satisfactory solution. However, there may be times when it is justified.

(4) A three-part separation may be made in the washing plant. The three products consist of good coal, intermediate coal and refuse. This corresponds to the practice of making concentrates, middlings and tailings, prevalent in the concentration of metalliferous ores, and it is the only logical and economical procedure.

Even Tables Will Reject Some Combustible

Ore middlings are always reground, then passed over some type of fine concentrator, which separates them into concentrates and final tailings. This can be done with the intermediate coal.

Several makes of coal-washing tables that perform this service satisfactorily are now on the market, but the refuse from these tables when treating bone will still contain a large amount of combustible matter. In a large operation total rejection of this material would mean a great waste of heat value.

The one economical and correct method of disposing of the intermediate coal is to burn it as fuel, either under boilers or in gas producers. Lack of a market, difficulty in hauling or small boiler capacity may sometimes preclude this disposition, but careful calculation should be made before any other manner of utilizing the intermediate coal is adopted. This is particularly true in designing new operations or in remodeling older ones. When the whole plant is co-ordinated, from the mine face to the finished steel, a place can be found wherein to use this intermediate product and utilize its fuel value.

It is free-burning, as it contains only a small amount of fines and no dust. This is because it is harder than the good coal and consequently does not break into fine pieces. All evident pyrite has been removed and so it works well on grates, particularly in modern stokers of the traveling-grate type. It may vary in ash all the way from 12 to 25 per cent, but is practically free from pieces of rock or slate.

A bulletin by the writer, "The Preparation of Coal for Coking," describes the method of successfully and automatically accomplishing the three-part separation. Proper treatment of the intermediate product is of real importance. The two prime factors are the conservation of the fuel values in the mined coal, and the present high cost of all fuel, a condition that probably will be permanent.

Simple Hand Jig for Coal-Washing Tests

Reference has been made to the type of hand jig used for separating certain metalliferous ores from the gangue with which they are associated and which I have found to be useful in determining the characteristics of any coal, as they affect jigging.

This equipment in its very nature is, of course, rather crude, and yet when operated by a competent man the results obtained approach closely the best that can be attained by a full-size automatically-controlled jig. Such machines are, therefore, to be recommended for making such investigations as have been hereinbefore discussed, when other and more accurate means are not available.

The complete jig can be built at any mining operation for a cost not to exceed $60. All the ironwork except the sieve bottom easily can be produced by the blacksmith on the job, while this remaining element can be obtained from any concern making perforated metal.

Referring to Fig. 1, the jig consists of a tank (1) constructed of matched flooring, with standards (3) at each side. In the top of these standards rocks the jig-pole mechanism (2), at one end of which is suspended the jigging sieve frame (5) by the adjustable arms (4). At the other end of this pole is the handle which is grasped by the operator and held high over his head, with his arms as nearly vertical as they can be worked. This man, standing on his toes and poised on a springboard, with knees slightly bent forward and with elbows unbent, by the muscles of his feet and limbs produces an upward and downward motion of the jig pole at the rate of about 120 strokes a minute.

Method of Operating the Hand Jig

The tank is first filled with water to a height sufficient to submerge entirely the jigging sieve and frame when the pole is held over the operator's head. It is then filled to within about 2 in. of the top of the sieve frame with raw coal of the size that is to be treated. The jigging operation is conducted for a period of approximately two minutes.

By rolling up one edge of a small piece of sheet steel, as shown at *A*, a scraper that can be grasped by both hands is made. The top portion of the coal as it lies in the jigging sieve frame is evenly scraped to one end, where it is removed by a flat shovel, care being taken not to dig into the bed any deeper than the level to which the bed has been scraped.

More coal is then added, the jigging operation repeated and the good coal removed as before. A layer of clean slate, or refuse, will begin to accumulate on the perforated sieve bottom, while above it a layer of intermediate high-ash, heavy coal will accumulate. None of the slate should be removed until a layer at least 4 in. thick has been formed. By this time there will usually be a layer, from 2 to 3 in. thick, of intermediate product, or bone, above which will appear the good coal.

Will Know Good Coal, Intermediate and Waste

In order to make a thorough separation between the good coal, the intermediate coal and the refuse, the operator who uses the scraper must cultivate an ability to judge by visual examination what constitutes these three preparations. There is no difficulty whatever in instantly recognizing the refuse or slate, and it will take only a short time to quickly see the difference between the good and the intermediate coal.

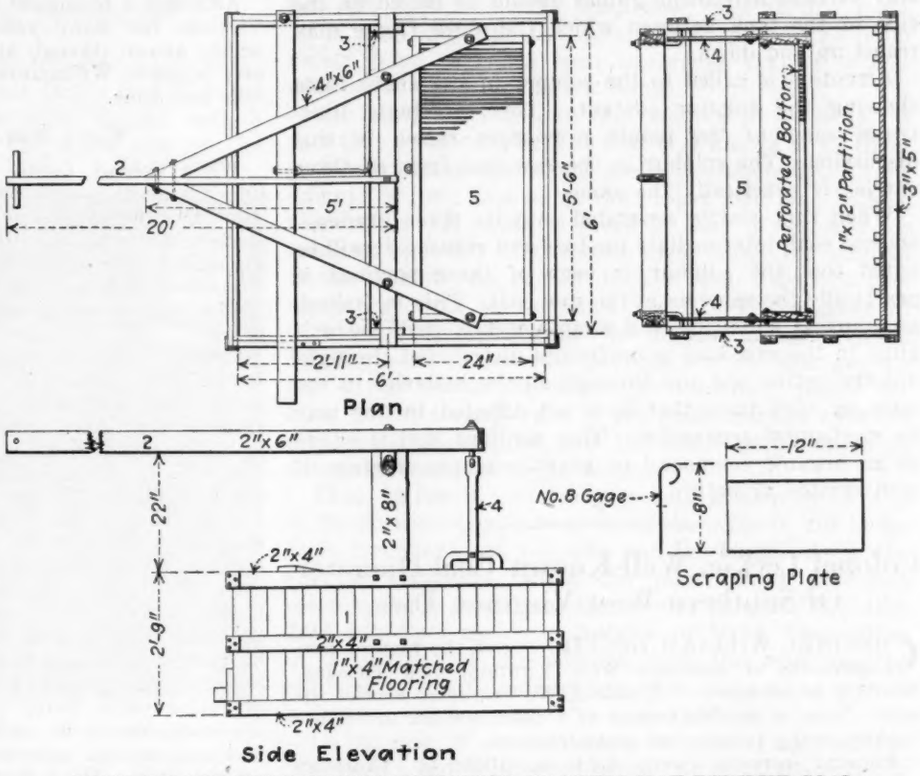
When the good coal has been removed, the operator should then use his scraper at one of the sieves, going down as far as it is safe to go without disturbing the refuse, and remove a shovelful or two of the intermediate coal, taking off only a comparatively small amount at each scraping, or perhaps removing the interme-

diate coal only every second or third time the good coal is withdrawn. When the pure refuse is to be removed, the intermediate coal should be scraped from the top and the shovel should be thrust into the refuse and part of it withdrawn. This should be repeated as often as it is necessary to keep the refuse from accumulating to a depth of more than 4 in. or thereabout.

The size of the perforations in the sieve bottom will depend somewhat on the problem in hand. If the coal contains the fines that come from grinding, the perforations in the sieve should not be larger than $\frac{5}{16}$ in. If it has all gone through a $\frac{3}{4}$-in. round hole, they should not be larger than $\frac{1}{8}$ in. The perforations should be in good stiff metal, not lighter than No. 8 steel. If, when the jig is operated, the sieve bottom has a spring effect, the whole process will be upset and the stratification will be unsatisfactory. The sieve bottom must be absolutely rigid.

It is advisable to have two men operate this machine—one to handle the pole and the other to scrape the bed and to fill and discharge the jigging sieve. The latter man will quickly become competent to determine whether the pole is given the proper stroke, and he should collaborate with the pole operator to get the best gratifying effect. This is determined by holding the hand, with fingers extended, immersed in the coal as it is jigged in the sieve.

If the action around the fingers and wrist is light and loose, without being violent, he will know the proper stratifying effect is present; if the bed is hard and leathery, he will know it is not present. Such a condition indicates that the stroke should be made a little longer so as to increase the jigging action. Should the coal be moving too violently around his fingers and wrist, he will know the stroke is too long. The proper jigging action will not be obtained until a suitably heavy bed of refuse has accumulated on the sieve.



HAND JIG FOR DISCOVERING HOW MUCH WASHING MAY BENEFIT COAL

A rough and ready homemade machine that two men can operate, one working the end of the pole and the other filling and discharging the jigging sieve and scraping the bed for good coal.

I have gone thus into detail in describing the operation of the jig in order that anyone who wishs to try it may perform the work in such a manner as to assure success.

As indicating what can be done in this regard the following table shows the results that were obtained in an apparatus of this kind at a large operation in eastern Tennessee. This mine is extracting coal from several beds where the quality varies greatly, and an effort was made to determine what kind of coal could be obtained by jigging the product from these various places, and what would be the result if certain of the coals were mixed in the coking operation.

RESULTS OF EXPERIMENTS MADE AT TENNESSEE MINE WITH TEST JIG

Coal from No. 2 Entry	Ash	Volatile and Combustible Carbon	Fixed Carbon	Sulphur	Moisture
Natural coal	26.05	27.72	46.08	0.58	1.49
Washed coal	12.70	31.45	55.70	0.50	2.70
Intermediate coal	18.81	29.02	51.02	0.54	5.26
Refuse	59.32	17.25	23.28	0.58	2.12
Coke from No. 2 Entry Coal					
Washed coal	14.38	2.22	83.25	0.54	5.26
Intermediate coal	32.96	2.15	64.74	0.60	5.33
Coal from No. 8 Entry					
Natural coal	25.76	26.68	47.71	0.58	2.90
Washed coal	10.89	30.98	57.98	0.50	4.94
Intermediate coal	20.68	27.10	52.07	0.78	5.20
Refuse	56.92	19.75	23.18	0.63	2.24
Coke from No. 8 Entry Coal					
Washed coal	14.11	1.82	83.92	0.48	3.70
Intermediate coal	32.68	1.90	65.27	0.78	4.60
Coal from No. 9 Entry					
Natural coal	12.91	30.48	56.46	0.47	1.51
Washed coal	9.66	31.95	58.24	0.47	3.57
Intermediate coal	12.68	30.85	56.32	0.52	5.48
Refuse	53.04	21.14	25.67	0.38	3.09
Coke from No. 9 Entry					
Washed coal	11.28	1.62	86.95	0.50	5.55
Intermediate coal	14.35	1.60	83.90	0.48	4.84
Mixture of Equal Parts by Weight of No. 2, 8 and 9 Entry Coals					
Washed coal	9.03	32.06	58.76	0.48	2.60
Intermediate coal	20.68	27.70	51.47	0.52	2.98
Coke from Mixture of Equal Parts by Weight of No. 2, 8 and 9 Entry Coals					
Washed coal	15.28	1.62	82.95	0.50	4.61
Intermediate coal	22.82	1.43	75.60	0.56	1.78

Men Soon Become Familiar With Process

I was present when only one of these tests was made. The men about the mine quickly became familiar with the process and succeeding runs were performed without further instructions.

The table is in the preceding column.

It should be noted that after the bed of good, clean slate and refuse has accumulated on the jigging sieve little, if any material, excepting fine refuse will go through the perforations of the sieve and into the tank underneath. What does pass through the sieve may be removed from time to time with long-handled shovels either by tilting the sieve backward and holding it there or by reaching in from the rear of the tank.

In jigging a material as light as coal difficulty is sometimes experienced when using this kind of apparatus in making the frame of the jig sieve have a truly vertical motion at each stroke. This must be maintained. Proper stratification will not take place if the sieve oscillates horizontally, and in order to insure only vertical movement guides should be nailed on the side of the tank between which the sieve frame may travel up and down.

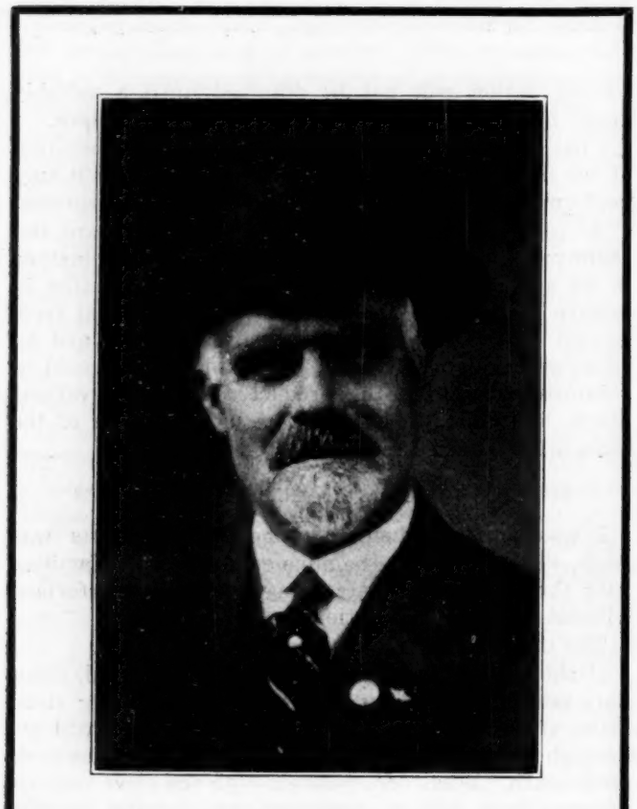
Attention is called to the column in the above table showing the sulphur content. This strikingly illustrates some of the points previously raised in this discussion. The sulphur in the raw coal from all three entries is practically the same.

When this coal is separated into its three grades—washed coal, intermediate product and refuse—it will be noted that the sulphur in each of these portions is practically the same as in the raw coal. This is, indeed, an unusual condition and simply means that the sulphur in the raw coal is uniformly distributed throughout the entire bed and through all the material in the seam in such form that it is not affected in any way by mechanical separation. This signifies that it exists as an organic compound or as microscopic crystals of iron pyrites, or both.

Colonel Leckie, Well-Known Coal Operator Of Southern West Virginia, Dies

COLONEL WILLIAM LECKIE, one of the pioneer coal operators of southern West Virginia, died Tuesday, Nov. 16, at his home in Bluefield, W. Va., after a brief illness. News of his death came as a distinct shock to Colonel Leckie's many friends and acquaintances.

Funeral services were held at Bluefield Thursday afternoon Nov. 18, in the Bluefield Presbyterian church, the Masonic lodge of that city being in charge.



Colonel Leckie is survived by his wife, three sons and two daughters. His sons are Andrew F. Leckie, of Welch; W. S. Leckie, of Aflex, and Douglas E. Leckie, of Huntington. His daughters are Mrs. S. J. Kell, of Welch, and Mrs. M. B. Moore, of Huntington.

Although a prominent figure throughout Southern West Virginia for many years, Colonel Leckie became more widely known through his purchase of the Maynard property opposite Williamson and the development of Leckieville and Aflex.

Was a Man of Varied Interests

While Colonel Leckie was largely interested in other lines his great success was made in the coal business, and his career, which was one of the most distnguished in the section, really began with the formation of the West Virginia Pocahontas Coal Co., which he organized in 1907. From that time until his death he was active in the organization of companies and the development of coal properties.

Colonel Leckie was president and general manager of the Leckie Fire Creek Coal Co. Leckie Collieries Co., Pond Creek Coal and Land Co., Leckie Smokeless Coal Co., Douglas Coal Co., Panther Coal Co., West Virginia Pocahontas Coal Co. and Leckie Coal Co., the latter a selling agency with offices at Columbus and Norfolk. In all of these companies he held a controlling interest. He also was president of the First National Bank of Anawalt, the Bluefield National Bank, the Leckie Realty Co., and was a director in the First National Bank of Welch.

On Oct. 4 he celebrated his sixty-third birthday. He began life as a coal miner in Scotland, where he worked in the same colliery with Harry Lauder, whose stage career he watched with keen interest. When a very young man he came to America and went to work in the hard-coal regions of Pennsylvania, living at Shenandoah. He became mine superintendent in the anthracite fields, and afterward went to Pocahontas as superintendent of the Consolidated plant at that place. He probably had as wide an accquaintance as any man in the coal business and was popular and highly esteemed by all who knew him.

To Educate Public in Southwest on Miners' Position on High Coal Prices

COAL miners of district 21, United Mine Workers of America, which includes Oklahoma, Texas and Arkansas, at a recent special meeting in Muskogee, Okla., voted to inaugurate a campaign of education to acquaint the general public with the real position of the miner with reference to the high price of coal, and also took steps for the erection of a permanent headquarters building at some point to be selected by a referendum vote of all the locals in the district.

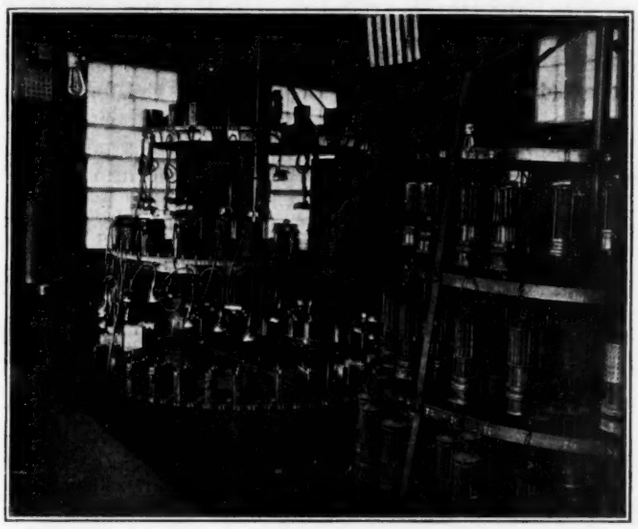
The special meeting was called to adjust differences between the miners and operators and, if possible, to avert threatened "vacation" strikes. After adopting resolutions recommending that district officials of the United Mine Workers continue their efforts to adjust any inequalities in wage disagreements by mutual agreement without cessation of work, the meeting also voted to inaugurate an educational campaign at once in order that the general public might be informed that the coal miner is not the beneficiary of the high prices that prevail in the coal industry. The resolution directed union officials to make investigation of what it costs the operator to produce a ton of coal in the various fields of the district, such costs to include wages paid the miner, transportation costs, insurance and all other expense items encountered up to and including the loading of the coal on the railroad cars outside the mines.

The convention voted to continue in office Edward Cunningham, of Bridgeport, Texas; Edward Grandon, of Huntington, Ark., and John Casey, of Dewar, Okla., as a committee to investigate co-operative store enterprises and report to the next convention.

Uses Twin-Bulb Cap Lights with Hard-Rubber Battery Case

One Bulb Used at a Time—When One Is Extinguished the Other Is Switched On and Work Continued—Rubber Is Not Rusted by Perspiration

AS THE amount of light furnished men when working is an extremely important factor the Kingston Coal Co., of Kingston, Pa., has experimented with a number of different lamps of the flame and of the



LAMPROOM WITH ITS DIVERSITY OF EQUIPMENT

Several different kinds of lamps have been and are still used at this mine. Two racks are here plainly visible. These accommodate the old safety lamps and the newer electric lamps.

storage-battery type, some of which, notably the Edison, have given several years of satisfactory service. Like all companies, it has found that the electric cap lamp gives more light and therefore assures greater efficiency than the flame safety lamp.

The electric lamps being used in the mines of the Kingston Coal Co. today are the Wheat, Edison and Witherbee, though how long the last will continue in use is questionable, as the manufacture of this lamp has been discontinued.

The Wheat lamp is manufactured by the Kohler Manufacturing Co. It has been in use at the No. 4 plant of the Kingston Coal Co. for almost a year and is giving excellent results. It employs an acid type of battery with lead plates and the apparatus possesses several noteworthy advantages. In the first place the case covering the battery is made of hard rubber and is consequently not affected by perspiration as is a metal-incased battery. Of course if the case receives a hard blow it may be more readily broken than one made of metal. But the men, knowing this fact, somehow give the lamp better care and protection than they otherwise might. As a result the battery cases are giving satisfactory service.

Another advantage possessed by this lamp is that the reflector contains two bulbs. Consequently, if one breaks the miner can turn a small switch and pass the current through the reserve bulb. Consequently he does not have to grope his way out in darkness. The battery, like some others, has a device enabling it to be used in shot firing. This outfit weighs about six ounces more than other types now on the market and the bulbs employed are of four-volt potential.

The lamproom of this colliery readily reveals the variety of lamps that are and have been in use. The two large racks in the foreground of the illustration support the old-fashioned safety lamps. The Davy is the only type of safety lamp now used at this mine. It is used only for the detection of gas. The other safety lamp rack has been altered so that it is now adapted to use with electric lamps.

An important detail in the issuance of these is the fact that a record is kept so that it is known at all times just what lamp each man has. Consequently, if any damage is done to a lamp, the proper man may be held responsible. A check is given to each miner, and his name is recorded on the lamp rack under the number of that token. He cannot draw a lamp unless he presents his check in exchange for it. The number of the lamp corresponds to the number of the check. Furthermore, in order to prevent a man from getting the wrong check, the lamproom attendant places the lamp on the issuing rack in the place marked with the corresponding number and the name of the man to whom the lamp is to be issued.

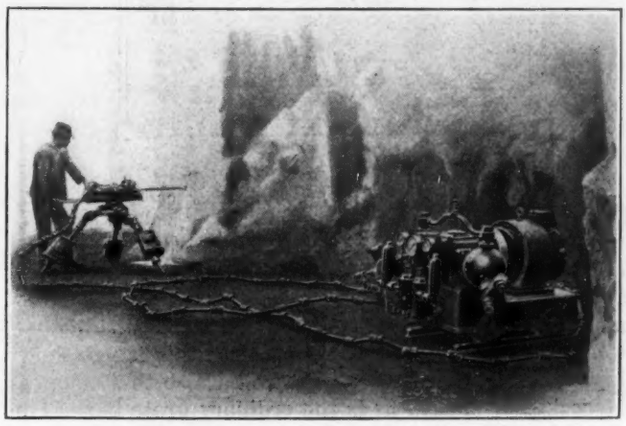
Thus, in case a man tampers with a lamp while it is in his possession and in so doing damages it, the lamproom attendant can tell who had the lamp. As a disciplinary measure, when the man comes the next morning he is issued not his regular lamp but one that does not emit the same volume of light. According to the extent of the damage done the man may be required to use this duller type for as much as a week before his regular lamp is re-issued to him.

In the rear of the lamproom is a charging rack for the Edison and Witherbee lamps, while in the extreme corner is placed a rack for charging the Wheat lamp. In this latter charging rack each row of lamps has its own control with its individual switch and ammeter.

Power May Be Transmitted by Wave Motion

POWER usually is transmitted by one of five methods: By steam, direct mechanical action, electricity, compressed air or hydraulic pressure. Wave transmission furnishes a sixth method, which utilizes for the transference of energy waves or pulsations set up in a confined liquid.

In its simplest form the apparatus consists of two



WAVE-POWER GENERATOR WITH ROCK DRILL

By the generator on the right are provided the pulsations which are carried by the jointed "Flexstel" piping to the rock drill.

cylinders, each fitted with a plunger and connected by a pipe, the entire system being filled with water, oil or other liquid. If one of the plungers is moved rapidly to and fro it will set up at each stroke impulses or waves of compressed water. These traveling along the pipe with the speed of sound (about 4,800 ft. per second) exert their energy upon the plunger at the further end, causing it to move with simple reciprocating motion in exact synchronism with the movements of the first piston.

This method of transmission is at present being utilized in such devices as rock drills, riveters and the like. Tools of this kind are extremely simple in construction and deliver to the point of application an unusually large proportion of the energy developed. Consequently the efficiency of the transmission is high.

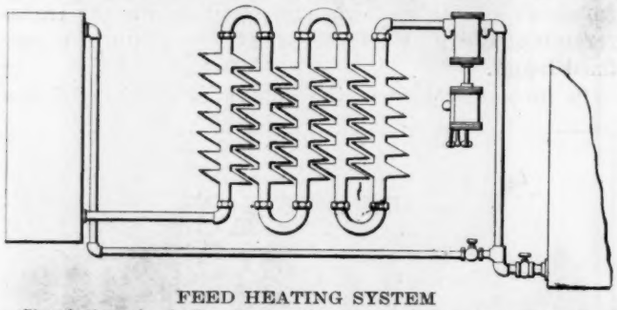
The devices operating upon this principle as manufactured by W. H. Dorman & Co., Ltd., of Stafford, England, at present perform only those functions that heretofore have been filled by compressed air. It is thought, however, that this wave motion can be applied to serve many other useful purposes. While now used only to transfer reciprocating motion, it is believed that it may be successfully used for the transmission of both rotary motion and heat.

Heating Feed Water Cools the Grate

IN THE accompanying illustration is diagrammatically shown a new device for heating water for boiler feed or other purposes. The arrangement is extremely simple, consisting chiefly of hollow grate bars through which the water is made to circulate either automatically or by means of a pump. By this latter method the circulation is positive and rapid, and consequently the heating is highly effective.

As may be seen in the illustration, the basic idea consists in making the grate bars of the furnace hollow and causing the water to circulate through them. The water is drawn from the bottom of a supply tank and after traversing the grate bars is either forced into the boiler or returned to the top of the tank.

Making the grate bars hollow and forcing water through them has other advantages besides merely heating the water. By this means the grate bars are kept cool and consequently free from warping. Furthermore, the cool grate prevents clinker from sticking. It would be quite possible also, although this is not shown in the illustration, to arrange the bars so that they can be rocked or shaken as is the ordinary grate bar. This water-heating grate is the invention of George A. Bynum, of Denning, Ark., and is readily adapted to use on locomotive or stationary boilers. A patent upon it has been applied for.



FEED HEATING SYSTEM

Circulating the boiler feed, either naturally or by means of a pump, through the grate bars not only heats the water but cools the bars.

Army Gas Mask of No Value in Carbon Monoxide or Oxygen Deficiency*

BY GEORGE S. RICE†

THE American army in France successfully used the gas mask to combat the poisonous gases emitted by German shells, and this caused many army men to feel that the gas masks were proof against any kind of gas which might be encountered. The result has been that from time to time the press has reported deaths of former army men who have attempted to use their masks as a means of enabling them to enter safely various unbreathable atmospheres such as those containing illuminating gas, gasoline vapor, and the gaseous products of mine fires. Such a case has just been reported from a mine in Copperopolis, Cal., where a former army man lost his life in descending a mine shaft which was filled with the fumes from a mine fire. Another man who in attempting to rescue him merely used a dust respirator lost his life also.

ARMY MASK HAS SERIOUS LIMITATIONS

Though the American type of the army gas mask was developed by the Bureau of Mines for the War Department and although since the war a section of the bureau's investigative force has been developing industrial gas masks for certain specific gases, the bureau has repeatedly called to the attention of the public the fact that such masks have serious limitations and that in no case should a gas mask be used in underground workings, for the reason that in the atmospheres encountered there may be an insufficient amount of oxygen to breathe (and the gas mask does not supply oxygen) or carbon monoxide may be present, which the army mask will not remove, for some carbon monoxide is always produced by a mine fire or by a coal-mine explosion, or by a blast of dynamite or other explosive.

It is true that the bureau has been developing a mask which may take care of a small percentage of carbon monoxide—that is, 1 per cent and under—but around mine fires and after explosions there may be, and frequently is, a much larger percentage of carbon monoxide in the mine atmosphere. Masks such as these, limited as they are in their scope, may be used in the presence of small percentages of carbon monoxide and associated gases and are designed for those working in surface industrial plants. They are suited, for example, for use on the top of a blast furnace or around gas producers in the open air.

Even when a test has shown only a small amount of carbon monoxide present in a mine, one cannot tell, on account of the rapidly changing conditions caused by the fire, whether within a short distance there may not be high concentrations fatal to life.

MASK CAN HELP WHERE OXYGEN IS LACKING

Finally, it cannot be stated too positively that a mask is not the slightest help when there is a deficiency of oxygen, and in the immediate vicinity of a mine fire oxygen is always deficient and usually is accompanied by the presence of both carbon dioxide and carbon monoxide. In many places in mines the presence of carbon monoxide is frequently unaccompanied by any condition from which its presence may be suspected, and if a man enters a place in a mine which contains

*From article entitled "Danger in Using Army Gas Masks in Mines," U. S. Bureau of Mines Reports of Investigations.
†Chief mining engineer, Bureau of Mines.

less than 8 or 10 per cent of oxygen he is likely to drop in his tracks without receiving the slightest premonition of his collapse.

Numerous instances have occurred where gas, such as firedamp (methane), has gathered into a pocket in the roof and men entering the place have immediately lost consciousness. Where they have been dragged out immediately and revived the victims have declared that they were under the impression that they had been knocked down. In case of the Copperopolis mine it is reported that a miner undertook to go down the shaft of a mine in which there was a fire, using the army gas mask which he had used overseas. It later proved that he was overcome and fell off the ladder into the sump. As he did not return two rescuers attempted to go down, wearing ordinary dust respirators, which, of course, are valueless against gases. One of these men fell off the ladder into the sump; the other man managed to get back into a skip and give the signal to hoist, but when he reached the surface he was unconscious and had to be revived by artificial respiration. The two bodies were later recovered from the sump by rescue crews, wearing breathing apparatus of the Bureau of Mines and working under the supervision of Bureau of Mines engineers.

This striking case presents an illustration of the absolute failure of the army gas mask and the success of the self-contained oxygen breathing apparatus in an irrespirable mine atmosphere.

Where Anthracite After Preparation Was Dropped Back Into Mine

SEVERAL interesting features in the stripping of anthracite are shown in the accompanying illustration. This picture was taken at one of the Cranberry Creek Coal Co's. old strip pits near Hazleton, Pa., where the Mammoth has been uncovered. The rock in the foreground and to the right, looking like a part of the roof of an observatory, is the foot wall of the coal measure, which at this point outcropped at or near the summit of a sharp anticline.

In the background, in the central portion of the picture, is seen the mouth of a breast that was driven up from the underground workings. When this pit was being worked the surface was stripped off, but the coal was mined from below and taken down the breasts into the mine, there to be loaded into cars and sent to the breaker for treatment.

To the extreme right of the illustration are seen the remains of an old abandoned washery. In this building coal was only partly cleaned, the large rock alone being removed; after which the coal was sent back into the mine down one of the breasts, where it was loaded into mine cars and taken to the breaker.

Now that practically all the coal has been removed from the stripping the pit is being used for a rock dump. This dump can be seen in the center of the picture and at the top.

WHERE THE OCCURRENCE OF AN ANTICLINE MAKES STRIPPING POSSIBLE

Anthracite stripping often differs from bituminous in the unevenness in level of the material to be stripped and in the fact that the strip material is all hauled out to a spoil bank, whereas in bituminous stripping as practiced the operation is one of casting. As the shovel in the latter pits has a long handle—about 90 ft. long—the casts of the shovel are large, but the operation is casting nevertheless.

Problems of Operating Men

By James T. Beard

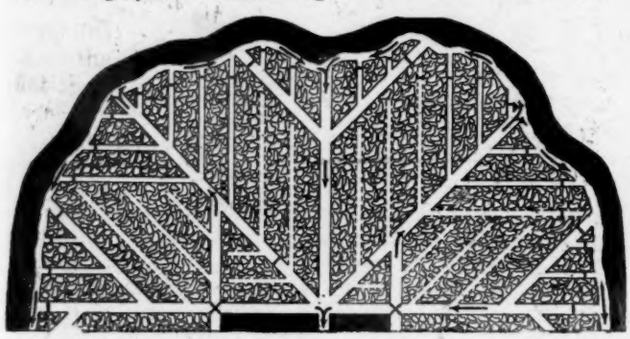
Greater Economy Needed in Working Thin Seams of Low Coal

The longwall method of mining is urged for the working of low coal, because of the greater economy afforded by that system.

REFERRING to the inquiry of L. E. R., *Coal Age*, Aug. 19, p. 403, regarding the working of a 35-in. seam of coal, allow me to suggest that the longwall method of mining presents features that will afford the greatest economy in the operation of the mine and yield a maximum production of coal at a minimum cost.

It cannot be denied that economy of working is an important feature in mining low coal. Not only is it important to obtain complete extraction of the coal, but the cost of operation must be reduced to a minimum, in order to realize a profit and make the undertaking a success.

The general plan of working coal by longwall is shown in the accompanying figure, which illustrates the advancing system where diagonal roads are driven to the



PLAN SHOWING DIAGONAL ROADS AND GATEWAYS

right and left of the main haulage road and working places or gateways are maintained by building good packwalls on each side of these roads. From time to time, the gateroads are cut off by other diagonals, from which new gateways are opened. The gateroads are driven on 42-ft. centers, and two men load coal at the head of each road. This affords a 21-ft. face of coal for each man and gives him a good day's run.

Longwall work requires an experienced man to have charge of the mine, as great care and watchfulness is needed to make this method of mining a success. The miners must understand that good packwalls have to be built in a solid substantial manner. In my opinion, this method is the only one that can be successfully applied to the working of low seams of coal.

Let me say that, in this instance, the advancing system should be adopted because of its giving quick returns, which will be needed to make up the daily payroll. I fully agree with the suggestion of Mr. Bain, however, who states in the issue of Oct. 21, p. 856, "Very much depends on understanding the movement of the overburden and keeping a proper control of the roof pressure, so that it shall be just sufficient to break down the coal." Without this knowledge and acquaintance with the work, I want to say the undertaking is liable to prove a costly operation.

Rock Forge, W. Va. WILLIAM HOWCROFT.

Lower Seam Worked in Advance of an Overlying Seam

Working out the coal from the lower of two seams separated by a considerable thickness of strata caused the floor in the upper seam to sink a few inches away from the coal, and again, in places, the coal in that seam dropped a few inches away from the roof.

MUCH interest has attached to the discussion of the question of what effect the working out of the lower one of two seams of coal that are separated by 250 ft. of strata would have on the later working of the upper seam, as suggested in the inquiry, *Coal Age*, Sept. 16, p. 594. The inquirer should have given more data regarding the nature of the intervening strata, the inclination of the seams, etc.

A question asked in a colliery managers' examination in England some time since shows the effect that may result from even a fairly slight inclination of the seam by causing the break to draw over a considerable distance on the rise side of a shaft pillar. In the same manner, any inclination in the two seams mentioned in this inquiry would have an effect to extend the break further than if the seams were level. However, this may not be in line with the discussion.

I recall an incident that occurred not long since in my own experience in the working of two seams of coal. I do not remember the exact thickness of the strata separating the seams, and it may have been some less than the 250 ft. mentioned in this case. However, we started the work in the lower seam first, mining that seam by the longwall method. The gateroads turned off the slant roads were driven 14 yd. apart with 9-ft. roadpacks built on each side of the road and leaving 24 ft. of waste between them, which was allowed to cave in as the face advanced.

EFFECT PRODUCED IN THE UPPER SEAM

Notwithstanding the fact that every precaution was taken to build solid packwalls the subsidence of the overburden was felt in the upper seam, as was found when mining was commenced later in that seam. The work in the lower seam was kept well in advance of that in the upper seam.

In working the upper seam, however, it was found that the floor had fallen away from the coal in places from one to three inches. In other places the coal had dropped with the floor leaving about the same vacancy at the roof. Again, in other places the strata remained solid and intact.

An important advantage resulted from the previous mining of the lower coal, however, in the draining off of the water and gas from the upper seam, leaving that coal of a hard woody nature and making it more difficult to blast. More explosives were required to break down the coal in the upper seam, but its commercial value was not injured.

WILLIAM DICKINSON, SR.

Oak Hill, W. Va.

Training the Assistant Foreman

Every assistant foreman should be in constant training for the position of mine foreman in order to enable him to assume the duties of that office at any time when he may be required to do so by reason of the absence of the foreman.

WHEN reading the letter of Oliver Young, *Coal Age*, Oct. 7, p. 756, I could not help but feel that he had outlined very fully the many duties of an assistant mine foreman. It has always seemed to me, indeed, that the work performed by the assistant makes him of as much importance as the foreman himself and it would be well if he came into closer touch with the superintendent.

There is little doubt but that the best results are obtained when the mine foreman and his assistants work together; but, from the nature of the case, this is often far from being true. Human nature is naturally selfish, and too often it happens that the assistant foreman is simply a buffer for the foreman. Occasionally, however, one will find an instance just the reverse of this condition.

Owing to his greater ability and practical knowledge the experience and judgment of an assistant foreman may and frequently do prove of more value than the same qualities in the foreman, who has come to hold little more than a nominal position in the eyes of his superintendent because of his lack of initiative. Observing, from time to time, instances where the foreman was a mere figure head and the responsibility rested largely on the assistant, led me to suggest his closer touch with the superintendent.

THE WISE FOREMAN TRAINS HIS ASSISTANTS

A good and wise foreman who is worthy of the position he holds will train his assistants to such an extent that he can call upon them at any time to act in his place when he is unavoidably detained or called away on other business. Foremen with this trait, however, are not as numerous as one would wish.

An incompetent foreman, on the other hand, is prone to be selfish in this respect. He prefers having around him assistants who he knows do not stand a ghost of a chance of ever becoming foremen. After being absent from the mine for a day it pleases him to know that things did not move along as usual and certain work awaits his return. The fact seems to impress him with a sense of his importance.

It has always been my contention that when the operation of a mine does not proceed as regularly in the foreman's absence as when he is present there is something wrong with the foreman. Evidently he has failed to train his assistants to perform the duties of the office in his absence, as the law requires.

I once knew of a superintendent who would frequently remark that he did not care to take a vacation because nothing went right while he was away. At the same time it was generally conceded that a 16-year old boy could have filled his place with equal satisfaction, so little did that superintendent have to do that was of a responsible nature.

As mine foremen, let us take another and broader view. Let us call to mind the time when our own ambition was to become a mine foreman. No man must think that he is so important that things cannot go on without him. When a fellow drops out there are a hundred others ready and able to fill his place. I often look back and think how eager I was to learn things that my foreman pointed out to me, and it makes me now feel for every ambitious assistant foreman or fireboss who is struggling to learn and to train himself for a higher position.

It is hard to understand Mr. Young's reference to the difficulty of determining who of two or more assistants wrote a certain report. In the anthracite region each assistant foreman and each fireboss must have a book of his own, in which he notes everything he has observed or done that day. Every report is signed by three persons, the assistant or fireboss making the report, his foreman and the superintendent.

SUPERINTENDENT CHECKS UP ALL REPORTS

At one of our large collieries there are twelve firebosses employed to examine the mine every morning and the superintendent insists that each of their books shall be on his desk before 7:30 a.m., together with the assistant foreman's report for the day previous. He examines the firebosses' reports of the morning and makes his first visit that day to those places where "gas" is reported, his purpose being to ascertain the cause of the unusual condition reported.

We have made a great advance in handling gaseous mines. I remember the time when 4 ft. of gas would be reported by a fireboss and the men allowed to take off their coats and brush it out. Today men are held out and not permitted to proceed to work if gas has been found in their places.

Mr. Young's remark that assistant foremen come into closer contact with the men than the foreman does not describe my experience. I believe that the bossdriver who is an old hand at the business is the "Information Bureau" of the entire mine. He can tell you anything you want to know and is able to give a good guess when his knowledge fails. In my opinion, what a bossdriver does not know cannot be ascertained from the foreman or any assistant.

RICHARD BOWEN,

Plains, Pa. Special Investigator, Hudson Coal Co.

Miners and Their Bosses

The human factor in coal mining is an important element of success. Encourage all mine workers to read and study. The boss is not the only one on the job who has brains.

IT WAS with great pleasure that I read the article that appeared in *Coal Age* Sept. 2, p. 495, by G. E. Daugherty, who I think must hail from the mountains of Kentucky. This and similar articles that have appeared from time to time in *Coal Age* show that the writers have at heart the best interests of the coal industry and are seeking the good of their fellow men.

We have everything to gain and nothing to lose by close familiarity with those about us. Along this line, I have often noticed the appeal made in *Coal Age*

asking the practical miner to give his views gained by experience in the mine; and I have thought that if *Coal Age* was thoroughly canvassed in the several mining communities, as I have seen done with other mining magazines, there would great benefit result to the miner.

The man with a limited education must depend largely on the reading of simple articles that give the practical experience of men in positions similar to his own. Their experiences always help him in his daily vocation and go very far to eliminate accidents that he is taught to avoid. It is unfortunate that in the mountain districts, where many coal mines are located, only the officials and bosses ever see *Coal Age*.

Unfair to Treat Workers as Children

No wonder some bosses conclude that since the miners have no papers to read they have no brains; and it is left to the boss to direct the miner and watch him as he would a child. This classification of men, as the result of conditions that surround them, is often unfair and leads to misunderstanding and friction between the men and their bosses.

For myself, I have every respect for the boss, but there are times when sent to do a certain work I feel I know where to start and how it should be done. Yet, as has been stated in *Coal Age*, orders must be given and obeyed. I always take my orders with good grace, though it may be like taking medicine when not needed.

Naturally an intelligent man feels that he would like to use his own judgment in some matters, particularly where it affects his personal safety. Often when the orders given by the boss differ from my own practical knowledge I cannot but think how the company's money is being spent needlessly, when there is an easier and perhaps a safer way to perform the work. Always in my mind are the three essentials in mining: safety, production and economy. PICKPOINT.

Cranberry, W. Va.

Hindrances to Mining Coal in the Mines of Great Britain

Physical conditions alone explain fully why the British coal miner working in mines in Great Britain is able to mine less coal per day than the American miner at work in the mines in this country.

WITH much interest I read the letter of H. S., which appeared in *Coal Age* Sept. 30, p. 687, where he gives a few only of the many reasons why the British coal miner puts out less coal a day than the American miner.

The question is not difficult to answer, provided one has had considerable experience in the mines of both countries. Allow me, then, to give a few of the instances that affect the relative producing ability of two miners working in the mines of Great Britain, as compared with the work of the same miners in American mines. I can best illustrate this by citing the experience of myself and brother who, a few years ago, were mining coal in Great Britain, but have now been engaged a number of years in the same work in this country.

First, let me say that the average American miner does not realize what is meant by the term "soft coal," as applied to the bituminous coal fields of Great Britain. Indeed, I have seen anthracite in this country that was far easier to mine than much of the soft coal in England.

My brother and I when working a chamber more than 60 ft. wide, in the bituminous coal regions of South Wales, found it necessary to undercut the coal with a pick for a distance of three feet or more. The work would take one man two days to mine the coal across the face of the chamber and he would have to work hard at that. Working together, my brother and I took turns at mining and loading the coal. While I used the pick my brother would load a car of coal; and again I would load a car while my brother worked with the pick.

One would naturally think that when a breast of coal had been mined to this depth it would fall of its own accord; but more often we would have to use wedges to force the coal down. This was known as "plug-and-feather." Our later experience goes to prove that had we been able to drill and blast the coal as we do here we would have mined more coal in a day than we did then in a week. But, as the use of explosives for blasting coal in the mines was prohibited, we had no other choice than to wedge down the coal that would not fall when mined.

Wages and Working Hours in British Mines Differ from Those of Today

There was no minimum wage there at that time, nor was the working day limited to eight hours. The miner was paid one shilling and four pence per ton, or about 33c. per ton of coal mined. It was necessary to lift about eighteen inches of bottom, which was done with a pick and hammer. The price per yard for that work was a "Thank you." The road being carried up the side of the chamber made it a long distance to handle the coal at the face. The miner loaded the coal into what was called a "curling box," holding about 50 lb. of coal. This was pushed or dragged along the floor; or the box was carried to the car if the headroom was sufficient along the face.

Besides these drawbacks it was necessary to work, in some of the deeper mines, by the light of locked safety lamps. In those mines the coal was worked by the longwall system and it was necessary for the miner to spend much time standing props with crossbars or booms to support the roof at the face.

In most of the mines the conditions were such that it was impossible to load coal with a shovel. Indeed, many times the timbers were stood so close to the face that there was no room to use the shovel. In such mines little undermining was necessary, but instead the miner was obliged to sprag his coal or brace it to prevent its falling and bringing the rock down with it.

For the most part these seams contain cleavages or "slips," as they are called by the miners. The slips would range from three to five or six feet apart and occurred in a generally east-and-west direction. Most of the chamber or "barry work" is driven north or south across the slips. At times the slips form an acute angle with the floor of the seam and are termed "face slips"; but if they form an obtuse angle with the floor the miner is said to be "working on the back."

Under these conditions the work must be performed with great care, and I believe it could be done more quickly if naked lights could be used. The miner is also obliged to build wooden "cogs" about every ten

yards apart and on each side of the road in his place. If one of our anthracite miners was told to build a cog at intervals in his chamber he would, I believe, soon be wending his way homeward.

In closing let me say that any British miner on coming to this country finds little difficulty in keeping up with his American cousin in any branch of the work. However, such are the hindrances, due to the physical conditions that exist in British mines, that I doubt if an American miner going to that country could keep pace with the miners employed there and who have long been accustomed to the difficulties with which they have to contend.

Without any desire or intention of flattering ourselves, I will say that my brother and myself have loaded six cars of coal a day in the old O. S. Johnson slope of the Scranton Coal Co., at Priceburg, Pa., far more easily than we ever loaded four cars, in a similar field of coal, in South Wales.

In the first place, here we have good roof, work with naked lights, drill and blast the coal, and have our cars placed by the driver at the face ready for loading, in chambers only 24 ft. wide. There is also a large scoop with which to load the coal. Above all, the mine foreman and his assistants treat us as men, which has been new to us, as the British mine manager (foreman) is little better than a Kaiser Wilhelm.

Plains, Pa. RICHARD BOWEN.

Inquiries Of General Interest

Firing a Boiler Under Varying Load

It is desired to know what saving of fuel can be effected through the proper firing of a boiler when the average day load is much greater than that during the nightshift, and in what manner the boiler should be fired to realize the greatest economy.

WE HAVE two 270-hp. McEwen engines, each operating a General Electric generator. The steam is furnished to the engines by a 400-hp. Babcock & Wilcox boiler, with grates 9 ft. long and 9 ft. wide. The generators give a current of 400 amp. for 16 hr. during the nightshift; but during the day the current consumed will vary from 500 to 1,200 amp. Both engines are operated during the eight-hour dayshift, while a single engine only is run at night.

What I desire to ascertain is the best method of firing the boiler under these changing conditions. Having regard to the varying load, which is far greater during the dayshift than at night, would it be possible to save fuel at night by carrying a steam pressure of only 60 lb. instead of the 100-lb. gage required throughout the day? Also, should the fire be kept high in front and low in the rear or made level over the entire surface of the grate?

JOHN O. BERKEBILE,
Kimmelton, Pa. Engineer, Reading Iron Co.

Since there are a greater number of heat units (B.t.u.) per pound of steam, at 100 lb. gage pressure than at 60 lb. gage, there will be consumed a lesser weight of steam, per horsepower hour, at 100 lb. gage than at 60 lb. For this reason, there is greater efficiency in using steam at the higher pressure, even when operating but a single engine, driving one generator and consuming less power. It should be remembered that, assuming a practically constant efficiency of boiler and engine, the consumption of fuel per hour is about in proportion to the power required or weight of steam generated in the same time.

In reference to firing a boiler, a good thickness of coal should be maintained over the entire grate, the coal being evenly spread and no holes or hollows permitted to form in the bed, which would allow comparatively cool air to reach the boiler. It is important to keep as nearly an even temperature as possible in the firebox. To this end, it is not the best practice to spread a large amount of fresh coal over a hot firebed.

What is known as the "coking method" of firing is largely used by experienced firemen. This consists of throwing the fresh coal on the fire near to the furnace door and allowing it to become ignited before spreading it evenly over the fire. In any case, the furnace door must be kept open as short a time as possible, as the entry of cold air into the furnace would lower the production of steam very rapidly.

The principle involved in good firing is to furnish just what air is needed to burn the weight of coal required for the generation of the steam. Any excess of air beyond this amount lowers the temperature of the furnace by absorbing the heat that should go to generate steam in the boiler but instead passes out into the stack and is lost. An insufficiency of air supplied to the furnace likewise causes a loss of heat through the incomplete combustion of the coal and production of carbon monoxide which passes into the stack.

Inclination of Chute in Handling Bituminous Coal

The inclination of a chute, in order to permit the coal to slide freely, depends on the size and condition of the coal as being wet or dry, the manner in which it is dumped and the lining of the chute.

AWHILE ago I read somewhere information relating to the proper inclination to be given chutes to enable the coal to slide readily. I cannot now recall where this information was given, but am very much in need of it at the present time. Will *Coal Age* kindly assist me in the matter? ENGINEER.

Poweroy, Ohio.

The majority of coal chutes today are metal lined, sheet iron or boiler plate being used for that purpose. Assuming the coal is to be dumped from the car into the chute, the inclination required to cause the coal to run freely will depend on the size of the coal and its condition whether wet or dry. Dry coal slides more readily than when it is wet and requires a less inclination of the chute.

For mine-run bituminous coal, an inclination of 26½ deg. will give good results where the dry coal is dumped from the car into a chute lined with sheet iron. The larger sizes of dry lump coal slide freely on an inclination of 26 deg., while chestnut and pea coal will generally require an inclination of 30 and 35 deg., respectively. If the coal is wet, these inclinations should be increased by 5 deg. for the larger sizes and 8 or 10 deg. for the smaller sizes.

Examination Questions Answered

Anthracite Mine Foremen's Examination
Eighth District, May 4, 1920

(Selected Questions)

QUESTION—*What are the advantages and disadvantages in using electricity for power or other purposes in mines?*

ANSWER—Where electricity can be used with safety in mines not generating gas the system has the advantage of being more flexible. That is to say, an electric system can be more readily installed and changed as conditions may require than either compressed air or steam. Again, the cost of installation is generally less taking everything into account. Electricity can be used for more purposes in the mines, being available for lighting, signalling and blasting, as well as drilling, coal cutting, pumping and hauling. Electric power can be produced and distributed from a central power station, or purchased from an independent power company.

The disadvantages pertaining to the use of electricity in mines are the danger of contact of men and animals with live wires; also the danger of ignition of gas accumulated in the mine; or the ignition of any combustible material through the sparking of wires, blowing out of fuses, short-circuiting of the current, etc.

QUESTION—*State the conditions under which the presence of the various mine gases may be expected. How may each be detected?*

ANSWER—Methane or marsh gas may be expected to accumulate at the faces of pitches and in rise workings, in mines generating gas and where the air current does not sweep the face in quantity sufficient to carry away the gases generated. The gas is found in larger quantity in live workings where fresh faces of coal are constantly exposed, especially if the ventilating current is inadequate.

Carbon monoxide may be expected in poorly ventilated abandoned areas, particularly where the coal is soft and makes much fine dust, or where spontaneous ignition has taken place in the gob and the waste areas of the mine, unless such places are thoroughly ventilated with an ample air current.

Carbon dioxide is found in poorly ventilated mines and abandoned places and where gob fires exist and there is a good supply of air.

Hydrogen sulphide may be expected in mines where the coal contains much sulphur that has disintegrated under the action of water or dampness.

Methane is detected by observing the flame cap formed in a safety lamp, when that gas is present in the mine air. Carbon monoxide, by observing the effect of the gas on small caged animals, as birds or mice. Carbon dioxide, by the dim burning of the lamps or their complete extinction. Hydrogen sulphide, by its smell.

QUESTION—*Under what conditions in a mine does the Anthracite Mine Law require a mine foreman to withdraw the men under his charge?*

ANSWER—The anthracite law (Art. 12, Rule 8) requires the mine foreman or other person in charge to withdraw the men from the mine or any portion thereof when it is found to be dangerous from the presence of gas or other cause whatsoever. The only persons permitted to remain are those removing the danger.

QUESTION—*Suppose you were about to examine a mine for explosive gas, what would you consider your first duty as a fireboss, before you entered on your rounds through the mine?*

ANSWER—Before entering the mine, the fireboss should carefully prepare and examine his lamp to see that it is filled and in safe condition. He must also see that the mine ventilating apparatus is working in the usual manner and that the customary amount of air is passing into the mine. He must place a suitable danger signal at the mine entrance to prevent anyone from entering the mine before his examination is completed. When he has finished and made his report, he should remove the danger signal and permit only those men to enter the mine whose places he has found to be safe for work.

QUESTION—*Two airways, one circular and the other square, each have an area of 81 sq.ft. and the length of each is 2,500 ft.; what is the difference in the rubbing surfaces of the two airways?*

ANSWER—First, find the difference in the perimeters of the two airways and multiply this difference by the common length. Thus, the perimeter of the square airway is $4\sqrt{81} = 36$ ft. The radius of a circular airway whose area is 81 sq.ft. is $r = \sqrt{\frac{81}{3.1416}} = 5.078$ ft. The circumference of a circle having this radius is $2 \times 3.1416 \times 5.078 = 31.9$ ft. The difference in the perimeters of these airways is, therefore, $36 - 31.9 = 4.1$ ft. The difference between the rubbing surfaces of the airways is then $4.1 \times 2{,}500 = 10{,}250$ sq.ft.

QUESTION—*What is the amount of rubbing surface in an arched airway 2,000 yd. long, the top being semicircular; the height from the floor is 10 ft. and the width 14 ft.?*

ANSWER—The radius of the semicircular arch is half the width of the airway, or 7 ft., and the perimeter of this arch is $7 \times 3.1416 =$ say 22 ft. The sidewalls are each $10 - 7 = 3$ ft. high and the total perimeter of the airway is therefore $22 + 14 + 3 + 3 = 42$ ft. Hence, the rubbing surface of this airway is $2{,}000 \times 42 = 84{,}000$ sq.ft.

QUESTION—*If in making your examination you discovered a place with 10 in. of gas at the face and tailing back along the roof 20 ft. to a point, what would be your duty in such a case?*

ANSWER—This is a dangerous body of gas and far too much for a fireboss to attempt to remove before completing his examination of the remaining portion of the mine or section in his charge. It is his duty therefore to "danger off" the place by the proper signs to prevent anyone from entering there unwarned. On returning to the mine entrance or shaft bottom, the fireboss must enter the danger in the book kept for that purpose and then proceed to take up the checks of the men who work in that place and also the places adjoining so as to prevent these men from going into the mine or starting to work, till the danger has been removed and the places again examined and found safe for work.

Besides entering his report in the book, the fireboss must report verbally to the foreman what dangers he

Mining Executives at Denver Continue Discussion of Business Problems*

At Meeting of American Mining Congress Interesting Discussion of Standardization Is Continued—Cottrell Would Let Government Regulate Use of Patents—Boyle Advocates Right to Combine Where Public Interest Is Not Jeopardized—Morrow Outlines Coal Situation

BY R. DAWSON HALL

CONTINUING to discuss the report of the Standardization Committee on "Outside Coal-Handling Equipment" at the meeting of the American Mining Congress, the assemblage was informed that the committee had given consideration to, but had come to no conclusion on, the vexed question of shaft fireproofing. The law of Illinois calls for a fireproof shaft, but is a shaft really fireproof when covered merely with a $\frac{1}{16}$-in. or a $\frac{1}{8}$-in. coating of asbestos board nailed to the shaft timbering? The question has often arisen in connection with the determinations of the Mining Board of the state. Further consideration was given to the question of cages and skips with provisions to prevent the fall of the cage on the severance of the cable and to make overwind and excessive speed impossible. However, no recommendation was made by the committee.

In the discussion of tipple clearances Carl Scholz declared that the prospect of larger railroad cars made it necessary to make clearances ample. For some time the largest railroad coal cars have had a maximum capacity of 200,000 lb., but the Virginian Ry., anxious apparently to keep its cars to its own line, has bought a number of cars of 120-ton capacity. These are 10 ft. 3 in. in width over clearances. J. Milliken, president of the Industrial Car Manufacturers Institute, of Pittsburgh, Pa., stated that the Pennsylvania R.R. was buying similar cars.

SAFETY MEN ON CLEARANCES

H. M. Wilson, director of the department of inspection and schedule rating of the Associated Companies, of Pittsburgh, Pa., said that the safety men who drafted schedules were satisfied with the 2-ft. clearance suggested, as between moving bodies, but wanted more than 18-in. between the edge of the car and stationary objects. The safety men were asking for 20 in. They also want 5 ft. between the top of the car and the stationary parts of the tipple. He believed that there should be some rule for overhead clearance, though, of course, the clearance was lost if a boom was allowed to hang down below that level.

As to fireproofing James Needham remarked that the Attorney General of Illinois had decided that a gunited shaft is fireproof. If so, is not a shaft lined with asbestos board also fireproof, or one covered with sheet-iron? In the discussion it was contended that while *in situ* these would be perfectly proof against fire, but what would happen if a car was dropped down the shaft on the top of the cage, causing a short circuit, or if an explosion took place? Either might wreck any other than a concreted shaft, exposing and perhaps ripping out the board backing on which the fireproofing had been erected, thus making it possible for the flames to attack the inflammable material.

Perhaps less forcibly it was questioned whether the backing would develop either dry rot or wet rot and so become unequal to the continued support of the fireproofing material. This is a less obvious danger with a tight material like gunite, for the air would be excluded and deterioration of the wood would be negligible. Mr. Needham said that the Attorney General had permitted the use of wood guides in such shafts as were otherwise fireproof.

RECOMMENDS 42-IN. TRACK GAGE

The Underground Transportation Committee made its report through C. E. Watts, chairman. Mr. Watts for his committee advocated a 42-in. gage, whereas, just before, the Mining and Loading Committee had expressed the idea that three gages might be provided—36-in., 42-in. and 48-in. It was stated that 80 per cent of the new trackwork already was of 42-in. gage. The committee recommended a radius of curvature on the main haulage of 28 ft., which was that of a No. 2 track frog. The wheelbase of new cars, it said, should be 42 in. The over-all length over sills, not bumpers, should be not more than 126 in.

It urged that the overhang of a car be not greater than a third the length of the car, that is, the car should never be longer than three times the wheelbase. The height of the coupling center it set as 10 in. Again the longwall men were forced to break in, this time in the person of J. A. Ede, of the Illinois Zinc Co. He felt that the longwall miner needed a car of somewhat less generous dimensions.

The report on ventilation was read by W. A. Rowe, chief engineer, American Blower Co., Detroit, Mich., in the absence of W. L. Montgomery, chairman. He stated that he had not seen the report till early that morning, and he considered that the parts referring to the conditions and size of the mine airways were beyond the province of the committee. In general, he was not in full sympathy with the report. It recommended that the speed of the air in the shaft should not exceed 1,000 ft. per min., and in the airways should be kept at or below 2,000 ft. per min. where union regulations were not such as to make the providing of sufficient airways too burdensome. It recommended that booster fans be used only in remote portions of the mines and be installed only to meet temporary exigencies.

The report advocated a second fan. This, Mr. Rowe said, would be an admirable provision for the American Blower Co., and so he hesitated to criticize it. The recommendation was made that two separate drives be provided for every fan, so that in case one failed, the other would be available. The report urged that the fan be fireproof and readily reversible. No report was made by the Drainage Committee.

TILT ON SCREW AND GEAR DIMENSIONS

Occasionally there were some lively but friendly tilts between the mine executives and the representatives of the manufacturing interests, the former suggesting that the machinery men used bolts and gears that were not standard, so that the purchasing agents did not venture to go into the open market to buy repairs, but were compelled to buy of the firm by which the machinery was supplied. The manufacturers denied that this was true.

The executives declared that it was sufficiently frequent to make the purchasing agents who were not skilled mechanics extremely doubtful as to the expediency of buying of any but the machine manufacturers. Carl Scholz declared that the only standardized feature was the price. This charge is either true or untrue, and it would seem possible to ascertain the facts and so relieve purchasing agents of this harassing uncertainty and the manufacturers of this aspersion.

In the afternoon the metal-mining standardization conference was held. Arthur Notman, superintendent of the mine department of the Phelps-Dodge Corporation, Copper Queen Branch, Bisbee, Ariz., reading a remarkably close analysis of drilling machines and drill steel. Mr. Notman is one of the members of the committee of which Norman B. Braly, of the North Butte mine, is the distinguished chairman. It appears that standardization of the bolts on any given machine is desirable, so that one or two wrenches will serve for setting up and ease of erection will be promoted. This seems to be of equal importance with the necessity of obtaining a reduction in the number of spare parts carried. Charles A. Mitke, consulting engineer, of Bisbee, Ariz., presided.

In the evening the third general session of the congress was held with Bulkeley Wells in the chair. Dr. F. G. Cottrell spoke on "The Bureau of Mines and the Industry." He concluded his

* Continued from issue of Nov. 25, article entitled "Mining Men Discuss Standardization Plans," p. 1109.

remarks by saying that patents are not treated in the same way as other monoplies. The railroad and the street-car lines, the gas and electric companies have franchises from the Government and certain rights in the courts; nevertheless, the Interstate Commerce Commission and Public Utilities Commissions exercised jurisdiction over their operation. Patentees, however, are given monopolies just as complete, and yet no control is exercised over the liberal rights thus granted. He believed that there should be some such restraint provided.

Analogy Close But Ill-Chosen

It might here be said that though there have been one or two important patents where an attempt has been made to take an excessive advantage of the public needs, yet on the whole the path of the patentee is long and difficult. If the advantage of his patent is provided beyond question, he is kept busy combating infringers of his right. The defence of such a patent is expensive and keeps him from concentrating properly on the development and marketing of the device. If its success is obvious, the difficulties of merchandising are such as to make the patent yield a meager return or involve the inventor in a more or less heavy loss.

It may become of recognized utility just when the expiry of the patent gives opportunity to a horde of imitators to invade the field and profit by the sales work of the patentee. Mining is a hazardous business, but the handling of a patent has even greater risks. The railroads and public utilities have been rendered unsuccessful and inadequate by reason of excessive regulation. Why destroy the patent business by an equally imprudent control? The analogy Dr. Cottrell uses is to the point, but it hardly helps to establish his argument. Rather it confutes it. Regulation has demoralized every industry to which it has been continuously applied, and it will do a like disservice to the industry of promoting patents.

Legal and Moral Obligations Differ

General L. C. Boyle, who is the attorney at Washington for the lumber interests, addressed the delegation on "Industry and the Government," urging the remission of the excess-profits tax and surtax, which have borne so oppressively on wasting industries. He spoke favorably of the Sherman law, but thought that combinations for the good of the public, entered into with the approval of the Government and supervised by it, should be permitted and even encouraged.

Recently, lumbermen had offered to meet for the purpose of regulating prices downward, but the Attorney General, while personally favorable to such a combination to lower prices, declared that it would be in violation of the Sherman law, and that the lumbermen would take this remedial action at their own risk. Needless to say, they did not take it, though a few individuals at their own initiative continued to sell below the market price. Mr. Boyle pointed out that it was dangerous to conspire to lower prices, because such a combination may be held by the courts to be a conspiracy to drive high-cost or financially weak producers out of the market by what are known as "dumping" methods.

He approved the exemption of labor unions from the operation of the Sherman Act, provided those unions were reasonable in their demands and responsible to the public. Organization he held was not morally a crime either on the part of capital or of labor, provided that the combination thus formed did not abuse the powers which organization provided.

Favors Curtailment of Production

He believed that a combination to curtail production and maintain a reasonable price in the face of a stagnant market was beneficial to capital, labor and the public; to the latter because it prevented the waste of material that always accompanied operations conducted with an insufficient profit margin or a loss. He noted from the newspapers that the farmers were forming an organization to control prices, and the Government seems disposed to permit it. He could see no harm in farmers thus manipulating the selling of the products of their industry, provided excessive profits were not sought.

The lumbermen would take the decision of the Supreme Court with all due deference, but if it goes against them they will feel justified in seeking by proper means such a revision of the law as will make their combination and other combinations than theirs permissible if not conducted in such a manner as to be incompatible with the public interest. They feel that their action has been morally justified in view of the fact that the Bureau of Forestry in a report has practically absolved them of any attempt to exact the payment of unfair prices.

To Stop Sale of Worthless Mines

The fourth general session was held at 2 p.m. on Wednesday with Carl Scholz in the chair, A. C. Mackenzie opening with an address on "Blue-Sky Legislation," urging the repeal of all state laws of this type and the enactment of federal laws in their place. State regulation, he said, was valueless, as the people within a state are protected by their local acquaintance with conditions and the approval given by a state with a blue-sky law often serves to give a specious value to a worthless property and to make it possible to sell poor stock beyond the state confines.

Judge E. Finney, member of the Board of Appeals, Interior Department, spoke on "The Interpretation of the Mining Laws" and James G. Fitch, of Socorro, N. M., on "State Taxation of Metal Mines." D. Vance Sickman, a mining engineer, of Denver, Col., read a paper describing "A Powderless Mechanical Process for the Mining of Coal." An abstract of this article will soon be published. Mr. Sickman in well-chosen words referred to the way in which machinery drives the man. He must either let it work or let it rest, and if the operation of the machine does not involve labor he would rather let it run to its capacity than stand idle. Mr. Sickman dislodges the coal by water pressure. A plant is being installed at Rock Springs Mine 4 of the Union Pacific Coal Co.

Losses from Death and Sickness

Dr. Arthur L. Murray, of the U. S. Bureau of Mines, Washington, D. C., discussed in broad terms "Industrial Medicine and Health Conservation." The two principal points made were that physical defects are rarely irremediable but can be corrected and that the industry sustains a heavy loss in the number of skilled men removed by death, accident and sickness.

In reference to the first contention he pointed out that of eighty-one applicants for hoisting engineers' licenses in the State of Utah, twenty-nine persons, owing to physical defects, were found unfit for employment of that character. Twenty men had defective vision, three had hernia, four had minor defects of the limbs and two had constitutional diseases. Only these last two were ultimately rejected, the other twenty-seven having their defects corrected. He said that sickness laid off employees on an average nine days every year. This appears to be only a small loss of time, but for 100 men the loss is 900 days, or the equivalent of three whole years for one man.

The fifth general session was placed under the chairmanship of Thomas T. Brewster, of St. Louis, Mo. Robert N. Miller, a solicitor in tax settlements, spoke, urging the mining men to demand that a board be appointed so capable and so distinguished that it would not hesitate to use its powers and make tax settlements which the lesser men in the present Internal Revenue office were afraid to make. These relatively inexperienced men did not feel assured of their ability to make decisions. Low salaries were filling the service with men of inadequate practical training and the better men were fast being drawn elsewhere by liberal offers.

How to Maintain Open Shop

George Wolfe, secretary of the Winding Gulf Operators' Association of Beckley, W. Va., surveyed "The Conditions of Operation and Production in the So-Called Open-Shop Districts." He declared that if the operators would sit tight they would have no difficulty in maintaining the open shop.

To illustrate the reasonableness of his contention he referred to the experiences of a West Virginia operator, John D. McKell of the McKell Coal & Coke Co., who declared to his men that he would not collect the check-off but would close his mines until his men were willing to work open shop. The men could stay in the company's houses

and work wherever they wished, but if they wanted to work in *his* mines they would have to do so without the check-off. After sixty days of striking they returned to work at Mr. McKell's terms.

In the Beckley district non-union and union mines are found on opposite sides of the track from each other. The non-union and union districts dovetail. Thus E. E. White runs a mine without the check-off, while just across the track is a plant of the American Smelting & Refining Co., where the check-off is in operation.

According to Mr. Wolfe about 85 per cent of the mine workers are reliable, desirable citizens. The other 15 per cent are men whose mission it seems to be to make trouble. The non-union mines gather the men who want to work, the unionization of neighboring mines driving them to places where they can labor without interference.

Sinister Influence Appears

Following Mr. Wolfe, E. W. Parker read a paper on "What Happened in the Anthracite Region in 1920." Dr. Parker declared that almost everything happened that could happen, but the most sinister matter was the advent of the consulting economist. A settlement had been practically effected, but the men, lured away by the specious figures of the consultant, were determined to hold out for larger gains. Their decision cost them heavy losses, the $40,000 paid to the economist being easily the least of those losses. Dr. Parker stated that the shortage of anthracite was greater than statistics showed, for the use of hard coal had increased while its production had decreased. A continued shortage of bituminous coal had further increased the use of anthracite. Furthermore, in prompt production statistics, no differentiation was made between various sizes of anthracite. It was certain that the percentage of the domestic sizes had decreased, for much—how much is not known—more small-size anthracite was made in 1920 than in previous years, this fine material coming largely from culm banks. Just what is the shortage of domestic sizes is not known.

Carl Scholz in speaking on "The West Virginia Appellate Court Decision," said that at his Illinois mine of about 1,000 men the check-off amounted to about $50,000 a year, each man paying roughly $6 per month to the union. The annual collection of dues probably will run from $25,000,000 to $30,000,000, some of which is locally distributed. He approved the declaration of George Wolfe that 25 per cent of the men in the mines were little disposed to support the union.

During the last year the mine workers checked out money to support Samuel J. Montgomery for Governor, Sam running on a third, or labor, ticket. Thousands came up to Charleston to march in a procession in his honor. Yet when the ballots came in Montgomery made a poor showing. The quiet men who endure the union in silence voted against the man whom they had been unwillingly aiding with their money. The labor voters of West Virginia are not to be coerced, though where opposition to the union cannot be secret they yield somewhat readily and weakly to the noisy 15 per cent.

J. D. A. Morrow, executive vice-president of the National Coal Association, spoke on "The General Coal Situation." He declared that a shortage of 5,000,000 tons of bituminous coal still exists, but it is rapidly being wiped out by the large production which the action of the Interstate Commerce Commission's service orders have made possible. The high prices for coal were not due to manipulation of the market but to frantic bidding by purchasers.

As an instance he cited four men who went out to buy coal to supply a single railroad. They knew that their jobs depended on their success. Consequently they bid against one another, each raising the price 25c. a ton. The railroad got the coal but at an unnecessarily high rate.

What constitutes a fireproof shaft? What is a proper clearance on a tipple? Which gage of track should be preferred? How much may mine car overhang wheels? How fast is it well to speed the mine air? Are machines, screws and gears usually standard?

The high price for coal severely crippled some buyers, but, being readily paid by others, they spent their money without any scruple as to the effect of their action on others. One concern sold its product at $100 per unit. The cost of coal even when figured at $20 a ton meant to that firm an increase in cost of only 30c. per unit. It therefore saw fit to conclude a contract at that high figure, arguing that it would be high enough to assure it of all the coal it wanted no matter what happened, for the company that entered into the agreement to supply the fuel would go into the market and get it if a strike at the mines of the company temporarily shut off production.

When a New Englander Prays

The New England difficulties were due largely to the fact that all the coal that New England wanted could not be taken through the Hudson River gateways. As the rate of transportation by water, owing to shortage of bottoms, was $1.50 a ton more than by railroad, the canny New Englander refused to buy water-borne coal at that higher rate, and when, owing to delay, he could not get any coal by water or rail, he made a bitter outcry. To quote Mr. Morrow, to be obliged to pay $1.50 more than another man is enough to make "the New Englander offer a prayer." Finally New Englanders demanded of the operators 1,250,000 tons a month. They were told then that the demand was excessive, but they insisted upon their estimate. In a short time they were declaring it was so much more coal than they needed that they could not find any place to put it. Mr. Morrow ended by condemning Senator Calder's plan for nationalizing the coal mines.

Callbreath Urges Higher Dues

On the morning of Thursday, Nov. 18, the members held their annual meeting, at which the secretary, J. F. Callbreath, made his annual report. He stated that the receipts during the fiscal year were $150,432 and the cash on hand $9,232. He believed that the by-laws no longer met with the growing needs of the organization and he suggested that the president name a committee of three to revise them.

Especially did it seem well to ask members to pay more than $10 for membership, for at that figure a member is a liability and not an asset, so expensive was the service now being afforded. There were two classes of members, those who paid $10 and those who attained membership by the contributions of companies and associations. There were roughly 900 of the one class and 2,500 of both classes.

The following directors ended their terms of office: Walter Douglas, of New York City; Edwin A. Taylor, of Pittsburgh, Pa.; S. A. Friedman, of Lovelock, Nev.; Carl Scholz, of Charleston, W. Va.; Charles S. Keith, of Kansas City, Mo. In their places the following were elected: James A. Douglas, of Bisbee, Ariz.; Robert Linton, of Butte, Mont.; W. F. Loring, of San Francisco, Cal.; Carl Scholz, of Charleston, W. Va., and Hugh Shirkie, of Terre Haute, Ind.

W. J. Loring Elected President

The president for the ensuing year is elected by the directors from their body, and later in the day W. J. Loring, of San Francisco, Cal., was chosen to succeed Bulkeley Wells. D. B. Wentz, of Philadelphia, Pa., was elected to succeed Harry L. Day, of Idaho, as first vice-president; E. L. Doheny, of California, who was third vice-president last year, this year becomes the second, the place he vacates being occupied by T. T. Brewster. J. F. Callbreath was unanimously re-elected secretary.

The first address at this conference was one written, but not presented, by H. H. Stoek, dean of mining of the University of Illinois, on the proper place of English in the engineering curriculum. No one doubted for a moment that English was needed, but the general sentiment seemed to be that it should be taught under the supervision of the engineering department and not as a broad cultural study. The main desideratum was the acquisition of simple, lucid English that would readily convey the correct meaning of the speaker or writer. The average student regarded English as an unnecessary grind and did not see why

he should be compelled to give time to it. Dr. A. X. Illinski, president of the New Mexico School of Mines, read a paper on mathematics contributed by Prof. Robert Peale, of the Columbia School of Mines. As that paper advocated the use of mathematics for its cultural quality it was quite forcefully attacked, Dean F. A. Thompson, of the Idaho School of Mines, who presided, declaring that all studies had this cultural value and that, as all could not be studied, only those should be given attention that were helpful to the student in his life work.

It was urged that success in teaching mathematics was attained only when it was taught by engineers, and some said the very names of the branches of mathematics should be eliminated, as trigonometry, analytical geometry, calculus and the like. The engineering student should get the training in seeking solutions to problems with which he would be confronted in his mining experience.

Conference Elects Officers

After a round-table lunch Charles H. Fulton, director of the Missouri School of Mines, was elected chairman; A. X. Illinski, president of the New Mexico School of Mines, was elected vice-chairman, and Francis A. Thomson, secretary. C. H. Claus, president of the Montana School of Mines, and D. A. Lyon, U. S. Bureau of Mines, were elected to the Executive Committee.

Addresses were made in the afternoon by Morton F. Leopold, safety engineer, U. S. Bureau of Mines; Dr. David White, chief geologist, U. S. Geological Survey; Dr. F. L. Ransome, also of the Survey; Henry Landes, geologist for the State of Washington, and Edward Higgins, who spoke on the safety code of the State of California.

In the evening the congress held its annual dinner at Daniels & Fisher's restaurant with Thomas B. Stearns in the chair. At its close a letter from President-elect Warren G. Harding was read and J. F. Callbreath was presented with a scarfpin in recognition of his labors as secretary. A life membership was awarded to D. W. Brunton. Thomas B. Stearns then became toastmaster, calling on U. S. Senator Charles S. Thomas of Colorado, who in his response said that American individualism was fast being sapped. The American no longer relied on himself for extrication from his difficulties, but whenever business did not go to his liking he went whining to the government. Thus the government was rapidly being centralized in Washington and so many laws have been passed that a man has to be a student in order to be sure that he is not a criminal.

Emmett D. Boyle, Governor of Nevada, presented a watch on behalf of the congress to Bulkeley Wells, and addresses were made by Carl Scholz, W. J. Loring, T. A. Rickard, E. B. Grey, who, by the way, had walked 175 miles to be present, being a resident at Fairbanks, Alaska, and chairman of it chapter; E. P. Matthewson, W. G. Bierd, president of the Chicago & Alton R.R.; L. C. Fisher from the Philippines, Governor B. B. Brooks of Wyoming and T. T. Brewster.

The sixth general session assembled on Friday in the convention hall, with Bulkeley Wells presiding. Arthur Notman spoke on the relations of the Phelps-Dodge Corporation with its employees. He related, among other matters, the selective-service system adopted in reducing its forces at Bisbee, Ariz., to meet the declining needs of the copper market. The discharge of large numbers of men was a regrettable expedient made as fair as circumstances allowed, but involving loss and discomfort to those discharged.

The bituminous coal industry works irregularly but does not discharge well-meaning and industrious workmen. It might well be questioned whether the way of the coal industry or that of the metal industry is to be preferred. Herbert Hoover seems to think that the metal industry is functioning better than the coal industry when it discharges men.

Copper Industry Functions Ill

To judge by Arthur Notman's talk neither he nor the Phelps-Dodge Corporation considered the copper industry as "properly functioning" when it faced such a necessity. Only Mr. Hoover seems to have discovered the peculiar malfunctioning of the coal industry. It might as well be admitted that most industry is badly functioning most of the time and that slow working is not the only form of failure to function. A discharge of workmen is quite as grievous, and no company more regrets its necessity than the Phelps-Dodge Corporation, which has done much to better the living conditions of its men.

Charles A. Chase, manager of the Liberty Bell Mines at Telluride, Col., discussed "Why Colorado Mining Engineers Adopted the Open Shop," and L. Ward Bannister, of Denver, Col., spoke to the title of "Denver and the Open Shop," advocating with much ability that the laws should be so written that a process served on an officer of a voluntary association should be regarded by the courts as a process served on every one of its members. This would make the association amenable to laws to which incorporated bodies are subject. He said that the plea of operators for the rights of non-union men was disingenuous, but added that he believed the public was quite ready to accede to the proposition that there was a menace to the employer and the nation in 100 per cent organizations.

Railroad Head on Labor Unrest

W. G. Bierd, of the Chicago & Alton R.R., spoke lengthily to the title "The Relation of Industry to Industry." He believed that workingmen would not give up readily the advantages gained during the war. But, as a matter of fact, has labor in general gained anything in the years that have just passed? A few industrials, like those in the coal-mining industry and the railroad industry (especially the more lowly day laborers), have gained at the expense of all other classes of workers, but labor in general has gained nothing. It has higher wages but no increased purchasing power. But if unhappy in his remarks about wages and unrest, Mr. Bierd's plea for no more government control contained elements in its favor and deserved greater amplification. James Lord, president of the mining department of the American Federation of Labor, was not present, and though on the program did not send an address.

A seventh session was called to hear the report of the Resolutions Committee. Bulkeley Wells' resolution for regulation of the use of patent rights was approved. It calls only for a committee of the congress to consider the matter and co-operate with government committees appointed to report on it. The preamble, however, speaks plainly in favor of the proposition. Another resolution by Carl Scholz, advocating that in the event of a department of public works being formed, the Department of the Interior be continued with control of Western lands, also was approved, as also a resolution emanating from the same source and urging that the Henderson bill, which would unite the U. S. Bureau of Mines with the U. S. Geological Survey, be enacted into law. Another resolution having the same author urged the formation of the department of public works.

Condemns Mine Nationalization

C. E. Debeque's resolution in favor of an appropriation for scientific inquiry into the technique of oil-shale development received approval as did also George Wolfe's resolution against the nationalization of the coal-mining industry. The blue-sky resolution failed of passage though backed by Sidney Norman and A. G. McKenzie. However, Mr. McKenzie induced the congress to avoid any expression of approval of the blue-sky laws already in existence.

Another resolution declared that, as it had been decided that the net proceeds of mines constituted profits and were all taxable without deduction for depletion, the Bureau of Internal Revenue is not justified in its rule that, regardless of actual conditions, actual facts and valuations, the invested capital of mining corporations should be ascertained by deducting from profits for each unit of minerals removed between the commencement of mining operations and the year 1916.

Congress May Meet in Pittsburgh

Pittsburgh, Chicago and Atlantic City were discussed as places for next year's congress. Pittsburgh appears to have the preference, but the matter is entirely in the hands of the directors. About 700 persons registered at this meeting. Probably 1,000 were in attendance.

Mexican Coal Miners Return; Get 20 Per Cent Increase

The coal miners' strike in the State of Coahuila, Mexico, ended Nov. 25, when the diggers returned to work on the Mexican Government terms, according to reports received at Eagle Pass, Texas. The terms include a wage increase of 20 per cent. The strikers, who numbered about 11,000, quit work Oct. 11, when their demands for a 100-per cent wage advance were refused. The mines were returned Nov. 22 to their owners by the strikers who seized them the preceding week.

Living Cost Receded 2 Per Cent During October

The cost of living declined nearly 2 per cent between Oct. 1 and Nov. 1, 1920, according to figures collected by the National Industrial Conference Board. This decrease, added to that which had already occurred, marks a total drop in the average cost of living of 5 per cent since the peak of price increases was reached in July, 1920. Rents and the average cost of fuel, light and sundries rose a little over July prices for these items, but the average cost of food and clothing continued to fall.

Railroads Continue to Surpass Pre-War Traffic Figures

Freight movement on American railroads during September continued to exceed records for bulk, according to a statement Nov. 23 by the Railway Executives' Association. It amounted to 40,999,843,000 ton-miles, which was more than the total moved in any one month either prior to or during the war, though it was 1,701,992,000 ton-miles less than the roads handled in August of this year.

Belgium Coming Back

Belgium's output of coal in September, 1920, equalled the output for September, 1913.

Federation of Labor to Move Against Lever Act

The American Federation of Labor will seek to have Congress at the coming session repeal the Lever Food and Fuel Control Law, under which the Government sought to restrain the late coal strike.

Automobile Plants Resume Work

Two thousand men have been put back to work in the parts department of the Willys-Overland Automobile Co., according to a recent announcement by Vice-President Kilpatrick, in charge of production. The Chevrolet Motor Co. will reopen its plant at Tarrytown, N. Y., on Dec. 1 and will operate at the rate of 100 cars daily. The plant has been practically shut down for the past month with only about 200 of its 2,000 employees at work. The Dodge Brothers Automobile Co. also announces an early resumption of work in its plants.

Charges Discrimination Against Mexical Labor Leaders

Canuto Vargas, secretary of the Pan-American Federation of Labor, on Nov. 29 charged that labor leaders of Mexico are being barred from the United States, instancing the refusal of immigration authorities at Laredo, Texas, to admit J. M. Tristan, of the Mexican Federation of Miners. The coal miners of Mexico were called out on strike by Tristan's organization and Tristan was coming to this country on a mission from the Mexican government.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

September Gasoline Output Sets New Record

All gasoline output records were broken during September, the Bureau of Mines announces. Refineries produced a daily average of 15,000,000 gallons, making the output total for the first nine months of 1920 3,500,000,000 gallons, as compared with 2,900,000,000 gallons during the same period in 1919. Consumption and exports continued high, the bureau said, so that while storage tanks on Sept. 30 held 298,000,000 gallons, the amount on hand then was less than on Aug. 30.

Employees' Bank Sets Example In Economy

The Shipbuilders' Co-operative Bank at Quincy, Mass., claims to hold the record for economical running expenses, with a total expenditure of $80.96 for the first nine months of its existence. The bank was formed by employes of the Bethlehem Shipbuilding Corporation to lend themselves money to build homes and to encourage thrift. The bank lends sums ranging from $50 to $8,000 and charges 6 per cent interest.

British Rail Freight Rates Are Three Times Those of U. S.

British freight rates applied to American rail traffic would have cost American shippers virtually $20,000,000 a day more in the first six months of 1920, according to an article prepared by the Bureau of Railway Economics in the *Railway Age*. Statistics quoted show that government controlled British roads had an average freight rate a ton-mile for the half year of 26.3 mills, while the American average was 9.7 mills. The larger-sized units in which American roads handle freight is given as the principal reason why this country's roads haul freight more cheaply.

Santa Fé Will Return to Eight-Hour Day

Announcement was made at the Santa Fé Ry. shops at Topeka, Kan., the largest on the Santa Fé system, of a reduction from nine to eight working hours a day. The nine-hour day was established two months ago to meet an urgent demand for repairs to cars and locomotives to expedite the movement of the wheat crop.

Spanish Coal Miners Ask Share of Profits for Education

The National Federation of Spanish Miners has passed a resolution calling on every miner in the country to join in a general strike on May 1 next and remain idle, unless the mine owners grant them fixed minimum wages according to working conditions in each mining district. The men also are requested to claim participation in the profits from each ton of coal mined, this money to be utilized for educational purposes. The mine owners regard the fixing of the time of the proposed strike at such a distant date as an indication that the miners are satisfied with their present conditions.

New Hampshire Utility Commission Urges Railway Economy

The New Hampshire Public Service Commission gave out a letter Nov. 23 to the Interstate Commerce Commission relative to the financial condition of New England railroads. While admitting that some readjustments of rates and changes in the present divisions of income might be necessary, the New Hampshire Commission also suggested that much might be saved by the roads themselves by rigid economies and curtailment of expenditure. Reductions of wages might be necessary, it was added, but the abolition of free passes now granted to employees and their families was urged.

Average Retail Prices of Coal in Principal Cities of the United States

AVERAGE retail prices of coal on Jan. 15 and July 15 of each year, 1914 to 1920, inclusive, and on June 15, 1920, by cities are shown in the table below, abstracted from the *Monthly Labor Review* for September, 1920, of the Bureau of Statistics of the U. S. Department of Labor. The prices are those quoted by the retail trade for household use.

In addition to the prices for Pennsylvania anthracite, prices are shown for Colorado, Arkansas and New Mexico anthracite in those cities where these coals form any considerable portion of the sales for household use.

The prices shown for bituminous coal are averages made on the several kinds. The coal dealers in each city were asked to quote prices on the kinds of bituminous coal usually sold for household use.

The prices quoted are for coal delivered to consumers, but do not include charges for storing the coal in cellar or coal bin where an extra handling is necessary. The bureau hopes to publish coal prices monthly hereafter instead of semi-annually, as heretofore.

Retail Prices per Ton of Coal for Household Use

City, and kind of coal	1914 Jan.	1914 July	1915 Jan.	1915 July	1916 Jan.	1916 July	1917 Jan.	1917 July	1918 Jan.	1918 July	1919 Jan.	1919 July	1920 Jan.	1920 June	1920 July
Atlanta, Ga.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$14.667	.....	.....	$18.500
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14.667	.....	.....	18.500
Bituminous	$5.295	$5.083	$5.250	$4.575	$5.050	$4.500	$7.000	$7.050	$7.444	$7.778	$8.029	8.250	$9.050	$12.545	13.250
Baltimore, Md.:															
Pennsylvania anthracite—															
Stove	[1]7.700	[1]7.280	[1]7.620	[1]7.138	[1]7.650	[1]7.800	[1]8.160	[1]8.542	[1]9.600	[1]10.450	[1]11.983	[1]11.750	[1]12.500	[1]13.500	[1]13.750
Chestnut	[1]7.950	[1]7.520	[1]7.870	[1]7.363	[1]7.880	[1]7.950	[1]8.310	[1]8.700	[1]9.750	[1]10.550	[1]12.042	[1]11.850	[1]12.600	[1]13.600	[1]13.850
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	[1]7.540	[1]6.893	[1]7.500	[1]8.786	[1]8.938
Birmingham, Ala.:															
Bituminous	4.228	3.833	4.090	3.646	3.913	3.644	5.080	5.607	5.616	6.461	6.741	7.286	7.496	8.791	9.431
Boston, Mass.:															
Pennsylvania anthracite—															
Stove	8.000	7.500	7.750	7.500	8.000	8.000	9.500	9.500	9.850	10.250	12.000	12.000	12.750	14.500	14.500
Chestnut	8.250	7.750	8.000	7.750	8.250	8.000	9.500	9.500	9.850	10.250	12.000	12.000	12.750	14.500	14.500
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.250	9.000	9.500	13.500	13.250
Bridgeport, Conn.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	10.000	8.667	10.500	10.400	12.370	11.750	12.500	15.000	15.000
Chestnut	.....	.....	.....	.....	.....	.....	10.000	8.667	10.500	10.400	12.370	11.750	12.500	15.000	15.000
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.125	8.000	8.500	12.000	.....
Buffalo, N. Y.:															
Pennsylvania anthracite—															
Stove	6.817	6.650	6.850	6.650	6.850	7.010	7.600	8.138	8.830	9.180	10.400	10.700	10.890	12.000	12.080
Chestnut	7.067	6.900	7.100	6.900	7.100	7.260	7.850	8.163	8.830	9.240	10.500	10.800	10.990	12.000	12.080
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.000	8.000	.....	11.000	12.000
Butte, Mont.:															
Bituminous	.....	.....	7.417	6.750	7.125	7.125	8.222	8.598	9.188	9.083	9.377	9.836	10.381	10.444	10.908
Charleston, S. C.:															
Pennsylvania anthracite—															
Stove	[1]7.750	[1]7.750	[1]7.750	[1]7.750	[1]7.750	[1]7.875	[1]8.750	[1]11.500	[1]12.275	.....	[2]	[1]13.400	[1]13.400	[1]16.200	[1]16.325
Chestnut	[1]8.250	[1]8.250	[1]8.250	[1]8.250	[1]8.250	[1]8.375	[1]9.250	[1]11.750	[1]12.475	.....	[2]	[1]13.500	[1]13.500	[1]16.300	[1]16.400
Bituminous	[1]6.750	[1]6.750	[1]6.750	[1]6.750	[1]6.750	[1]6.750	7.000	8.000	8.000	8.375	8.500	8.500	8.500	12.000	12.000
Chicago, Ill.:															
Pennsylvania anthracite—															
Stove	8.080	7.900	8.100	7.900	8.100	8.240	9.750	9.583	10.350	10.900	11.808	12.200	12.590	14.150	14.675
Chestnut	8.330	8.130	8.350	8.150	8.350	8.490	9.670	9.667	10.338	10.975	12.016	12.300	12.690	14.288	14.788
Bituminous	5.000	4.850	5.068	4.708	4.938	4.800	7.083	6.813	6.671	6.475	6.700	7.017	8.020	8.414	8.946
Cincinnati, Ohio:															
Pennsylvania anthracite—															
Stove	8.000	7.917	7.917	7.667	8.000	7.875	10.000	.....	9.500	11.660	[2]	12.000	12.500	.....	14.000
Chestnut	8.250	8.167	8.167	7.833	8.083	8.125	10.125	.....	9.500	.....	[2]	12.000	12.667	14.000	14.000
Bituminous	3.750	3.500	3.500	3.500	3.688	3.500	5.500	5.958	6.098	6.725	6.478	6.139	6.739	8.000	8.000
Cleveland, Ohio:															
Pennsylvania anthracite—															
Stove	7.500	7.500	7.650	7.400	7.650	7.850	9.688	9.667	9.825	.....	11.050	11.538	12.300	13.525	14.050
Chestnut	7.750	7.750	7.900	7.650	7.900	8.100	10.000	9.667	9.575	.....	11.175	11.650	12.233	13.500	14.025
Bituminous	4.400	4.571	4.643	4.607	4.643	4.946	8.227	7.000	6.901	6.443	6.821	7.710	7.911	9.200	11.357
Columbus, Ohio:															
Pennsylvania anthracite—															
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12.000	12.000	14.650	14.650
Bituminous	.....	.....	.....	.....	.....	3.640	6.400	6.031	5.943	6.179	6.088	6.056	6.513	9.982	9.458
Dallas, Tex.:															
Pennsylvania anthracite—															
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18.000	20.000	22.000	.....	.....
Arkansas anthracite—															
Egg	.....	.....	.....	8.250	9.000	8.375	11.500	11.000	14.334	14.250	15.800	14.500	18.500	17.000	17.000
Bituminous	7.929	7.150	7.545	6.950	7.458	7.208	10.167	8.583	10.139	10.386	10.980	11.083	14.583	14.000	14.083
Denver, Colo.:															
Colorado anthracite—															
Stove, 3 and 5 mixed	10.500	8.929	9.214	9.071	9.333	8.786	9.600	10.750	11.750	12.325	12.650	13.150	14.000	14.600	14.875
Furnace, 1 and 2 mixed	11.000	9.071	9.286	9.071	9.333	9.071	9.900	11.000	11.750	12.325	12.650	12.650	13.500	14.530	14.875
Bituminous	6.474	5.300	5.641	5.192	5.250	5.019	6.000	6.500	7.598	7.995	8.148	8.348	8.908	9.371	9.469
Detroit, Mich.:															
Pennsylvania anthracite—															
Stove	8.000	7.500	7.938	7.500	7.950	8.000	9.750	9.125	9.880	10.150	11.600	11.890	12.650	14.250	14.625
Chestnut	8.250	7.750	8.188	7.750	8.200	8.250	9.800	9.313	10.080	10.520	11.710	11.980	12.750	14.200	14.625
Bituminous	5.200	5.188	5.179	5.237	5.237	5.611	7.583	7.500	8.267	8.180	7.732	7.988	8.781	10.933	12.417
Fall River, Mass.:															
Pennsylvania anthracite—															
Stove	7.750	7.688	8.000	7.750	8.750	8.438	11.000	10.688	10.750	11.000	12.700	12.500	13.000	14.500	14.500
Chestnut	8.000	7.688	8.000	7.750	8.750	8.438	11.000	10.438	10.750	11.000	12.383	12.250	12.750	14.250	14.250
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.000	10.250	9.500	10.000	12.250	12.875
Houston, Tex.:															
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	9.000	.....	10.000	10.000	12.000	11.500	11.900
Indianapolis, Ind.:															
Pennsylvania anthracite—															
Stove	8.300	7.750	8.250	7.650	8.250	8.500	10.167	.....	9.825	10.250	12.250	12.250	13.000	13.750	14.375
Chestnut	8.500	7.950	8.450	7.900	8.450	8.688	10.333	.....	9.925	10.500	12.333	12.250	13.167	14.250	14.875
Bituminous	4.611	4.000	4.673	4.208	4.411	4.568	6.800	.....	7.107	6.163	6.875	7.375	8.188	9.313	9.625

[1]Per ton of 2,240 lb. [2]Zoned out by Fuel Administration.

Retail Prices per Ton of Coal for Household Use—Continued

City, and kind of coal	1914 Jan.	1914 July	1915 Jan.	1915 July	1916 Jan.	1916 July	1917 Jan.	1917 July	1918 Jan.	1918 July	1919 Jan.	1919 July	1920 Jan.	1920 June	1920 July
Jacksonville, Fla.:															
Pennsylvania anthracite—															
Stove	$9.000	$9.125	$9.000	$9.000	$9.000	$9.000	$11.000	$12.000	$12.000	.....	(2)	$15.000	$17.000	.....	18.000
Chestnut	9.000	9.125	9.000	9.000	9.000	9.000	11.000	12.000	12.000	.....	(2)	15.000	17.000	.....	18.000
Bituminous	7.125	6.875	7.500	7.000	7.500	7.375	8.000	8.500	9.333	$9.825	$10.000	10.000	11.000	$14.000	$15.000
Kansas City, Mo.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.210	17.400	.....	.....
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.470	17.625	.....	.....
Arkansas anthracite—															
Furnace	8.286	7.917	8.333	7.833	8.333	8.125	9.292	.....	12.592	13.700	15.107	13.593	15.950	15.150	15.750
Stove, or No. 4	8.929	8.500	8.833	8.375	8.833	8.667	9.958	.....	13.150	14.200	15.550	14.550	16.583	15.750	16.500
Bituminous	4.276	4.093	4.200	4.056	4.515	4.353	6.438	5.700	6.703	6.700	7.354	7.469	8.625	9.118	9.600
Little Rock, Ark.:															
Arkansas anthracite—															
Egg	.....	.....	.....	.....	7.625	7.625	9.000	.....	11.500	12.750	12.975	12.500	.....	.....	14.500
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13.333	13.250	.....	.....	.....
Bituminous	6.250	5.833	5.972	5.361	6.000	5.750	8.000	7.857	8.250	9.155	9.414	9.250	10.375	11.950	12.591
Los Angeles, Calif.:															
New Mexico anthracite—															
Cerillos egg	17.000	.....	15.000	15.000	18.000	16.000	.....	.....	22.000	20.000	21.150	.....	21.000	.....	.....
Bituminous	13.500	12.000	13.600	11.375	13.700	12.900	15.000	14.375	14.881	14.700	14.688	14.583	16.000	17.000	17.000
Louisville, Ky.:															
Pennsylvania anthracite—															
Stove	8.750	8.450	8.700	.....	.....	.....	.....	.....	.....	.....	(2)	12.750	13.750	.....	.....
Chestnut	8.750	8.450	.....	.....	.....	.....	.....	.....	.....	10.640	(2)	12.750	13.750	15.000	.....
Bituminous	4.377	3.953	3.997	3.478	3.816	3.737	5.734	6.583	6.038	6.783	6.743	6.816	6.836	9.813	9.531
Manchester, N. H.:															
Pennsylvania anthracite—															
Stove	8.750	8.500	8.750	8.500	9.000	8.750	11.000	11.000	11.000	10.500	12.500	12.750	13.417	15.000	15.000
Chestnut	8.750	8.500	8.750	8.500	9.000	8.750	11.000	11.000	11.000	10.500	12.500	12.750	13.417	15.000	15.000
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.000	10.000	10.000	10.000	12.000	13.000
Memphis, Tenn.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.000	16.000	16.000	17.000	18.000
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.000	16.000	16.000	17.000	18.000
Bituminous	[3] 4.219	[3] 4.219	[3] 3.883	[3] 3.833	[3] 3.904	[3] 4.083	[3] 6.222	[3] 7.018	6.539	7.171	7.221	7.528	8,000	8.850	9.563
Milwaukee, Wis.:															
Pennsylvania anthracite—															
Stove	8.080	7.930	8.100	7.900	8.100	8.300	9.020	9.167	9.500	10.968	12.286	12.400	12.600	14.688	14.800
Chestnut	8.330	8.180	8.350	8.150	8.350	8.550	9.270	9.367	9.650	10.904	12.378	12.500	12.700	14.788	14.900
Bituminous	6.143	5.714	6.143	5.625	6.000	5.875	7.743	8.000	7.385	7.385	7.814	8.144	8.960	11.469	12.167
Minneapolis, Minn.:															
Pennsylvania anthracite—															
Stove	9.350	9.133	9.307	9.150	9.350	9.900	10.350	10.650	10.826	12.238	13.708	13.800	14.000	16.440	16.520
Chestnut	9.600	9.383	9.557	9.400	9.600	10.150	10.600	10.900	10.926	12.328	13.786	13.900	14.100	16.480	16.560
Bituminous	5.875	5.846	5.990	5.960	5.977	6.375	8.077	8.600	8.888	8.474	9.000	9.189	10.425	11.918	12.044
Mobile, Ala.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	14.000	.....	.....	17.000	17.000	.....	.....
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	14.000	.....	.....	17.000	17.000	.....	.....
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	8.000	9.000	9.429	9.722	10.333	11.400	11.900
Newark, N. J.:															
Pennsylvania anthracite—															
Stove	6.500	6.250	6.500	6.250	6.500	6.750	7.208	7.250	8.100	8.500	9.750	10.050	10.483	11.750	11.767
Chestnut	6.750	6.500	6.750	6.500	6.750	7.000	7.292	7.250	8.100	8.500	9.750	10.050	10.483	11.750	11.767
New Haven, Conn.:															
Pennsylvania anthracite—															
Stove	6.571	6.579	7.000	6.750	7.500	7.742	9.500	9.000	9.750	10.100	12.050	11.333	12.250	14.250	14.583
Chestnut	6.571	6.579	7.000	6.750	7.500	7.742	9.500	9.000	9.750	10.100	12.050	11.333	12.250	14.250	14.583
New Orleans, La.:															
Pennsylvania anthracite—															
Stove	10.000	10.000	10.000	10.125	10.500	11.700	13.100	.....	13.067	.....	(2)	16.000	17.500	.....	19.000
Chestnut	10.500	10.500	10.500	10.625	11.000	12.200	13.500	.....	13.300	14.550	(2)	16.000	17.500	18.500	18.833
Bituminous	[3] 5.944	[3] 6.071	[3] 5.950	[3] 6.083	[3] 6.091	[3] 6.063	[3] 6,944	.....	8.040	7.789	8.900	8.292	9.269	10.333	10.857
New York, N. Y.:															
Pennsylvania anthracite—															
Stove	6.857	6.850	7.143	6.907	7.107	7.393	8.500	8.440	9.958	9.300	10.757	10.800	11.536	12.800	13.067
Chestnut	7.000	6.993	7.286	7.057	7.250	7.421	8.500	8.420	9.083	9.293	10.764	10.857	11.600	12.814	13.067
Norfolk, Va.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	10.000	9.500	11.700	12.500	13.000	14.500	14.500
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	10.000	9.500	11.700	12.500	13.000	14.500	14.500
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	7.750	7.750	8.250	9.375	9.750	11.727	12.125
Omaha, Neb.:															
Pennsylvania anthracite—															
Stove	10.700	10.700	10.750	10.700	10.750	11.750	13.200	13.250	13.188	.....	.....	16.450	17.275	19.940	21.300
Chestnut	10.950	10.950	11.000	10.950	11.000	12.000	13.400	13.500	13.330	.....	.....	16.550	17.450	20.080	21.400
Bituminous	6.125	6.125	6.083	6.167	6.042	6.000	7.857	7.750	7.950	7.388	8.471	8.930	10.108	11.168	11.465
Peoria, Ill.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	10.250	11.000	.....	11.667	13.000	.....	14.000
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	10.500	11.025	.....	11.750	13.000	.....	14.000
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	5.500	.....	5.850	5.550	6.000	6.375	7.429
Philadelphia, Pa.:															
Pennsylvania anthracite—															
Stove	[1] 7.281	[1] 7.050	[1] 7.250	[1] 7.013	[1] 7.250	[1] 7.494	[1] 7.969	[1] 8.319	[1] 9.594	[1] 9.806	[1] 11.244	[1] 10.850	[1] 11.881	[1] 13 286	[1] 13 469
Chestnut	[1] 7.531	[1] 7.300	[1] 7.500	[1] 7.263	[1] 7.500	[1] 7.744	[1] 8.188	[1] 8.519	[1] 9.681	[1] 9.888	[1] 11.319	[1] 10.950	[1] 11.906	[1] 13.250	[1] 13 438
Pittsburgh, Pa.:															
Pennsylvania anthracite—															
Stove	[1] 7.713	[1] 7.550	[1] 7.875	[1] 7.567	[1] 7.967	[1] 8.000	[1] 10.500	[1] 10.625	.....	[1] 11.000	[1] 12.750	[1] 12.750	[1] 13.750	[1] 15.250	[1] 15.250
Chestnut	[1] 7.775	[1] 7.550	[1] 7.933	[1] 7.567	[1] 8.017	[1] 8.100	[1] 10.850	[1] 10.650	[1] 10.150	[1] 11.050	[1] 12 700	[1] 12.663	[1] 14.000	[1] 15.125	[1] 15.175
Bituminous	[4] 3.188	[4] 3.158	[4] 3.225	[4] 3.225	[4] 3.326	[4] 3.450	[4] 4.857	[4] 5.750	[4] 5.278	5.656	6.000	5.833	6.179	7.333	7.375
Portland, Me.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	10.890	11.040	13.000	12.200	13.440	15.360	15.360
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	10.890	11.040	13.000	12.200	13.440	15.360	15.360
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	10.453	10.890	10.853	8.573	9.370	12.650	14.810
Portland, Ore.:															
Bituminous	9.625	9.729	9.382	9.224	9.438	9.263	10.276	9.659	10.181	10.442	10.566	11.493	11.618	11.800	11.955
Providence, R. I.:															
Pennsylvania anthracite—															
Stove	[5] 7.750	[5] 7.450	[5] 7.750	[5] 7.500	[5] 8.750	[5] 8.500	[5] 10.000	[5] 9.500	[5] 10.500	[5] 11.375	[5] 12.400	[5] 12.000	[5] 12.950	[5] 14.500	[5] 14.500
Chestnut	[5] 8.000	[5] 7.700	[5] 8.000	[5] 7.750	[5] 9.000	[5] 8.500	[5] 10.000	[5] 9.500	[5] 10.500	[5] 11.375	[5] 12.400	[5] 12.000	[5] 13.000	[5] 14 500	[5] 14.500
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	[5] 10.500	[5] 9.000	[5] 10.000	[5] 3.167	[5] 13.625
Richmond, Va.:															
Pennsylvania anthracite—															
Stove	7.750	7.542	8.000	7.500	7.900	8.000	9.450	9.500	9.500	9.900	11.500	12.000	12.125	13.500	13.500
Chestnut	7.750	7.542	8.000	7.500	7.900	8.000	9.450	9.500	9.500	9.900	11.500	12.000	12.125	13.500	13.500
Bituminous	5.423	5.042	5.444	5.023	5.364	5.063	7.268	7.250	7.686	7.811	8.222	8.464	8.931	10.286	10.882

[1] Per ton of 2,240 lb. [2] Zoned out by Fuel Administration. [3] Per 10-barrel log, (1,800 lb.) [4] Per 25-bushel lots (1,900 lb.) [5] Fifty cents per ton additional is charged for "binning." Most customers require binning or basketing the coal into the cellar.

Retail Prices per Ton of Coal for Household Use—Continued

City, and kind of coal	1914 Jan.	1914 July	1915 Jan.	1915 July	1916 Jan.	1916 July	1917 Jan.	1917 July	1918 Jan.	1918 July	1919 Jan.	1919 July	1920 Jan.	1920 June	1920 July
Rochester, N. Y.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	$7.200	$7.750	$8.150	$8.550	$9.050	$10.300	$10.600	$10.800	$12.100	$12.200
Chestnut	.....	.....	.....	.....	.....	7.450	7.900	8.250	8.650	9.150	10.400	10.700	10.900	12.200	12.300
St. Louis, Mo.:															
Pennsylvania anthracite—															
Stove	$8.150	$8.175	$8.333	$8.033	$8.583	8.500	9.816	10.250	10.433	11.000	.....	12.900	13.100	14.433	14.350
Chestnut	8.350	8.363	8.500	8.200	8.750	8.750	10.050	10.563	10.533	11.250	.....	12.900	13.225	14.433	14.350
Bituminous	3.288	3.056	3.214	3.050	3.179	3.073	4.615	4.788	5.444	5.893	5.463	5.425	5.970	6.650	6.675
St. Paul., Minn.:															
Pennsylvania anthracite—															
Stove	9.333	9.183	9.350	9.150	9.350	9.883	10.350	10.675	10.727	12.248	13.453	13.800	14.000	16.380	16.483
Chestnut	9.583	9.433	9.600	9.400	9.600	10.133	10.600	10.883	10.827	12.417	13.543	13.900	14.100	16.420	16.517
Bituminous	6.121	6.089	6.167	6.153	6.203	6.610	8.213	8.568	9.162	9.148	9.582	9.875	11.531	13.277	13.258
Salt Lake City, Utah:															
Colorado anthracite—															
Furnace, 1 and 2 mixed	11.500	.....	11.500	11.563	11.714	11.429	12.000	12.875	14.000	15.000	15.333	16.000	16.313	17.833	18.375
Stove, 3 and 5 mixed	11.472	.....	11.500	11.571	11.786	11.429	12.000	12.875	14.000	15.000	15.333	16.000	16.583	18.167	18.375
Bituminous	5.580	$5.552	5.462	5.462	5.464	5.464	5.658	6.368	7.250	7.303	7.875	7.205	8.236	9.256	9.250
San Francisco, Calif.:															
New Mexico anthracite—															
Cerillos egg	17.000	17.000	16.833	16.833	17.000	17.000	19.000	19.000	20.750	18.600	21.550	20.500	23.000	23.000	24.000
Colorado anthracite—															
Egg	17.000	17.000	16.833	16.833	17.000	17.000	19.000	.....	18.600	18.600	19.400	19.400	21.750	21.750	23.000
Bituminous	12.091	12.400	12.273	12.333	12.250	12.250	13.429	14.500	13.867	14.083	14.200	13.591	15.100	15.643	16.643
Savannah, Ga.:															
Pennsylvania anthracite—															
Stove	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.100	16.067	17.500
Chestnut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.100	16.067	17.500
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.100	13.233	14.440
Scranton, Pa.:															
Pennsylvania anthracite—															
Stove	4.500	4.313	4.438	4.125	4.375	4.800	5.250	5.250	6.113	6.050	7.475	7.683	8.233	9.100	9.275
Chestnut	4.750	4.563	4.688	4.313	4.625	4.800	5.250	5.250	6.150	6.150	7.563	7.783	8.300	9.100	9.275
Seattle, Wash.:															
Bituminous	[6] 6.167	[6] 5.800	[6] 5.906	[6] 5.313	[6] 5.528	[6] 5.750	[6] 5.850	[6] 6.133	[7] 7.867	[7] 9.133	[7] 9.163	[7] 9.103	[7] 9.588	[7] 9.463	[7] 9.843
Springfield, Ill.:															
Bituminous	.....	2.646	2.078	2.094	2.563	2.750	2.706	3.455	3.711	3.661	3.832	3.976	3.950	4.420	4.450
Washington, D. C.:															
Pennsylvania anthracite—															
Stove	[1] 7.588	[1] 7.419	[1] 7.731	[1] 7.400	[1] 7.625	[1] 7.725	[1] 8.206	[1] 8.567	[1] 10.100	[1] 9.960	[1] 11.890	[1] 11.911	[1] 12.447	[1] 13.650	[1] 13.793
Chestnut	[1] 7.738	[1] 7.569	[1] 7.881	[1] 7.550	[1] 7.775	[1] 7.856	[1] 8.200	[1] 8.625	[1] 10.190	[1] 10.064	[1] 12.019	[1] 12.011	[1] 12.538	[1] 13.729	[1] 13.857
Bituminous	.....	.....	.....	.....	.....	.....	.....	.....	.....	[1] 7.700	[1] 7.974	[1] 8.050	[1] 8.267	[1] 9.840	[1] 9.694

[1] Per ton of 2,240 lb. [3] Zoned out by Fuel Administration. [3] Per 10-barrel lot (1,800 lb.) [4] Per 25-bushel lots (1,900) lb. [5] Fifty cents per ton additional is charged for "binning." Most customers require binning or basketing the coal into the cellar. [6] At yard, delivery $0.50 to $2, according to distance. [7] Prices in zone A. The cartage charge in zone A is $1.85, which has been included in the average. The cartage charges in Seattle range from $1.8 5to $2.90, according to distance.

Coal Statistics Shown to Have National Importance—III

Consumers' Stocks the Most Significant Barometer of Supply—Survey by Fuel Administration and Bituminous Commission Reveals Interesting Possibilites

By F. G. Tryon*

THE subject of consumers' stocks of fuel is almost a virgin field. Prior to the war it had remained entirely unexplored. Yet when a sufficient store of data concerning stocks is available for comparison, stocks are likely to prove the most significant single barometer of the coal supply, for stocks constitute the consumer's reserve against an interruption to his line of communication.

In the United States it is not customary to store coal above ground at the mine, nor is there any present indication that the practice will be adopted in the future. It has been aptly remarked that the cheapest place to store coal is underground in the coal bed. Every rehandling of coal adds greatly to the cost laid down at the consumer's door.

Distribution Program Dependent on Stocks

Stocks are the final proof of whether or not production has been keeping pace with consumption. Other things being equal, very large stocks are a sign that the market has been oversupplied and forecast a season of low prices. Depleted stocks, on the other hand, show that production has fallen behind consumption and forecast a period of active demand and consequently of high prices. Data on stocks would, therefore, furnish a fact basis for the ordinary commercial transactions of buying and selling coal. Moreover, in formulating a program of distribution, a knowledge of consumers' stocks is indispensable. When in June, 1920, representatives of New England and of the Northwest appeared before the Interstate Commerce Commission, praying for priority in the distribution of the limited quantity of coal then being produced, the most significant test of the solidity of their claims was the general level of stocks in the two localities.

The task of taking a complete count of stocks is great. The number of commercial consumers was found by the Fuel Administration to exceed 90,000. Only a large statistical office, devoting its primary attention to the maintenance of a mailing list of commercial consumers of coal, could hope to obtain a complete count of stocks, and even then completeness would be purchased at the sacrifice of rapid publication of results. The very magnitude of the task suggests that better results could be obtained by sampling. An experiment in this direction, begun by the Fuel Administration in the first quarter of 1919 and repeated by the Bituminous Coal Commission in co-operation with the Geological Survey in June, 1920, indicates that by addressing a limited list of perhaps 5,000 representative consumers well scattered over the country, and ascertaining both stocks on hand and current consumption, it is possible to express the stocks in terms of weeks' supply, a common denominator for all localities, periods and types of consumers.

Having obtained the average weeks' supply at the current rate of consumption for the major groups of consumers we may approximate the total quantity of coal in commercial storage by weighing the stocks of each group by their weekly requirements. Calculations of this sort are necessarily estimates and are subject to a considerable margin of error, but it is possible to check the results against the known production and the apparent consumption, taking into account exports and imports. Subjected to this test, estimates of total commercial stocks which were wide of the mark would involve sudden and erratic changes in rates of consumption which did not square with other facts of record.

In obtaining statistics of stocks, the most uncertain element in future requirements will be cleared up also. We are accustomed to speak of the extraordinary increase in fuel consumption during the war period, and of the slump in consumption during the year 1919. The figures of pro-

*U. S. Geological Survey.

duction for the two years, 1918 and 1919, are indeed startlingly wide apart—579,000,000 tons in the war year, and 458,000,000 tons in the year of reconstruction. But of the difference—121,000,000 tons—probably not more than 51,000,000 tons represented a variation in the rate of consumption, the larger part—70,000,000 tons—being changes in stocks. For during 1918 there was a net addition to stocks of 30,000,000 tons, and during 1919 a net draft on stocks of 40,000,000 tons. In other words, any one attempting to forecast requirements at the beginning of 1919 would have been more concerned with the stocks then on hand than with the depression in business activity, great as the latter was to prove.

Consumption Can Be Accurately Judged

The consumption of coal is a fairly constant quantity, except as affected by the seasons and by business depressions. We are constantly adding to our store of information concerning the normal seasonal fluctuation in consumption, but we cannot yet predict whether the winter will be cold or mild. The forecasting of business depressions is beyond the ken of the coal producer. However, given information as to stocks, a certain season of the year, and a healthy tone of business, the monthly consumption of fuel may be predicted with a considerable degree of success.

The importance of current records of prices is so obvious as to require no comment here. They are watched intently not only by buyers and sellers of coal but as a measure of the social justice of the producers' profits.

Quite apart from the social justice of a prevailing price of coal prices have an immediate significance in coal distribution and consumption. The demand for coal is notably inelastic. As the ultimate source of most of our power and heat, it has no competitor or substitute on a large scale. In consequence even a slight maladjustment between demand and supply creates abnormal prices for free or non-contract coal. This principle is well illustrated by the experience of the spring and summer of 1920. During this season there have been few authenticated instances of plants actually closing down for lack of fuel, yet the difficulty of obtaining coal and the apprehension of a possible interruption of supply during the winter have induced purchasers to pay spot prices from 100 to 500 per cent above the government maximum.

Exorbitant Prices Upset Distribution

The minute prices reach such extravagant levels, inequalities and irregularities in the distribution of coal develop. Consumers, like public utilities, operating under a fixed return, cannot compete with prosperous manufacturers who are able to increase the price of their product and with whom, as often happens, coal is a minor item of expense. Even the prudent consumer, whose requirements are covered by contract, finds difficulty in obtaining deliveries on the contracts he holds. The result is that in addition to the general draft upon stocks, which occurs in a time of scarcity, some consumers run out of their supply long before others, and if a tie-up of transportation occurs, occasioned perhaps by a great storm, the results are much more serious than if the same amount of coal had been evenly distributed as far as possible among all consumers.

Despite reluctance on the part of the railroads it is expected that they will yield in the matter of allowing a return to normal reconsignment practices. The matter was brought before the Interstate Commerce Commission Nov. 16 by the American Wholesale Coal Association. Time would be required for the formal complaint to go through regular channels, but the situation may be met by voluntary action on the part of the railroads. The railroads have indicated that their best judgment is that the present reconsignment order should remain in force for the present, but in view of the insistent demand it seems probable that they will yield. It was pointed out that an increasing number of cars are being unduly held out of service because of refusal of coal by consignees.

Indiana Fuel Commission Orders 600 Cars of Coal Sent to Relieve Emergencies

More than 600 carloads of coal were sent to various points in Indiana Nov. 15-20 for emergency use on orders of the Special Coal Commission. Jesse E. Eschbach, chairman of the commission, said that about 200,000 tons of Indiana coal were distributed throughout the state during the week at the price fixed. Arrangements were made by Mr. Eschbach recently for thirteen cars for Indianapolis. He said that an additional supply of Indiana coal for this city would be obtained shortly. Retail coal dealers of the state have been instructed by the commission to report each week the name of the mine from which their coal has been obtained, the price paid and other information of value to the commission in determining the general situation.

Confiscation by railroads of coal ordered sent to various localities in Indiana by the State Special Coal and Food Commission will be fought to the limit by the commission, Jesse E. Eschbach, chairman, stated recently.

To Protest Confiscation by Railroad

Word reaching the commission's offices is to the effect that the railroads have sufficient quantities of coal on hand to run them and that there is no necessity for confiscation of supplies sent to various cities on order of the commission to relieve shortages. A car of coal consigned to a down state city on order of the coal commission was confiscated by the Monon R.R. and steps will be taken, probably by the commission, to have the coal replaced. Most of the railroads have agreed not to molest coal that is being shipped on orders of the commission should the car be so labeled.

The order of Judge John E. Cox in the Vigo County Superior Court, granting an injunction restraining the Special Coal and Food Commission from enforcing an order directing the McClellan Coal Co. to supply a certain quantity of coal each month for use of customers, will not affect the commission as it merely prohibits the prosecutor of Vigo County from prosecuting the company for failure to carry out the order.

The Ogle Coal Co., wholesaler, Indianapolis; the Vigo Coal Products Co. and the Vigo Mining Co., both of Terre Haute, alleged to have violated the orders of the commission, were cited to appear before it Saturday, Nov. 20, at 10 a.m., and show why their licenses to do business in Indiana should not be revoked. It is alleged that thousands of tons of coal were sold at prices or margins higher than are legal in Indiana.

Coal operators' attorneys have said they are waiting for the commission to revoke a license so they may have a basis for a test case against the law creating state jurisdiction over the coal industry.

The Federal Grand Jury has been summoned to convene Monday, Dec. 6. This will be the first Federal Grand Jury to meet since the sessions of the special jury that returned indictments on March 11, 1920, against 125 soft-coal operators and miners. Preparation for the jury has been under way for several months. For about a week Mr. Van Nuys has devoted practically every day solely to matters that are to be brought to the attention of the jury.

Testimony given by Mr. Van Nuys at the recent investigation of Attorney-General Palmer's connection with the conspiracy case against the operators and miners indicated that indictments might be drawn against additional defendants as a result of the information obtained during the summer in preparation of the conspiracy case.

The establishment of a municipal coal yard in Indianapolis was urged in resolutions adopted recently by the Central Labor Union and a committee composed of Charles Kern, A. J. Fritz and William Neu was appointed to go before the City Council to represent the interests of labor.

The Supreme Court at its sitting on Nov. 22 did not announce a decision in the Lever law case and announced a recess until Dec. 3.

Kentucky May Have Coal Tonnage Tax

THE move in the State of Kentucky to tax coal and oil production, which was killed before the spring session of the Legislature, is coming to life again as a result of efforts of S. Thurston Ballard, coal operator and miller, of Louisville, as Lieutenant Governor of Kentucky, to do something for the Republican standard bearers. Mr. Ballard defended the coal-production tax last spring, but after a 50c. per gallon tax was placed on whisky, a 1c. per gallon tax on gasoline, and motor licenses were raised, all for state roads, he felt satisfied.

Later the courts held the whisky tax unconstitutional. Now Mr. Ballard, who is a good-roads enthusiast, is endeavoring to have a special session of the General Assembly called to take up the question of a 10c. a ton production tax on coal and a similar tax on oil, asserting that these industries are taking away the state's natural resources and shipping them elsewhere, the operators getting all the benefits, and the state none. It is held that the coal operators pay a small tax in proportion to their operations and the business done.

Mr. Ballard has favored similar taxes in all coal-producing states to relieve unfair competition which would exist if operators in other states were not taxed, and has favored a convention of Governors on this subject. However, as some of the other bituminous states can't see the idea, Kentucky may have to labor under a tonnage tax alone.

Investigating Committee Gives Causes for High Coal Prices in New York

A JOINT committee representing the Department of Health, the Real Estate Board of New York, the Building Managers & Owners Association, and the Advisory Council of Real Estate Interests, appointed to investigate the coal situation in New York City, submitted its report to Health Commissioner Royal S. Copeland on Nov. 20, in which it found that high prices were caused by:

"The greater difficulty of mining as the mines become deeper and more extended.

"The greater cost of shoring and pumping, in some instances fifteen or twenty times as many tons of water as of coal being removed.

"The cost and inefficiency of labor.

"Strikes, vacations and holidays.

"Faulty administration of car service.

"Excessive royalties paid owners of coal lands, which, based on Girard estate mine leases, are on a percentage basis and increase with the cost of mining and price of coal, so that some collieries pay $1.26 per ton royalty.

"The purchase of coal at mines by speculators and middlemen, who sell a car over and over again before it reaches the consumers.

"Profiteering by retail dealers.

"Excessive cost of delivery from the yard to the consumer."

The committee was of the opinion that the prices charged for domestic sizes in Manhattan—$12.75 to $13.50 and $14—were fair, and that prices beyond this were excessive.

The committee made the following recommendations:

"That definite and enforceable contracts be made with the mines direct or with duly authorized distributing agents by the local coal distributors for weekly deliveries beginning April 1 of each year.

"That steps be taken at once for the establishment of reserve storage yards sufficient to contain at least one month's supply of coal.

"That state legislation be enacted for the incorporation of labor unions and trade organizations and that strikes and lockouts, unless authorized by a majority vote of the organizations, either labor unions or business, and taken by secret ballot under the supervision of local election officials, be declared felonies.

"That before such ballots be taken two weeks' proper legal notice be given the members of such organizations and the public generally.

"That the mutual agreement zones of delivery be fixed by the local coal distributors so as to preclude, if possible, long delivery routes, with their delay and expense.

"That during a coal emergency such as now exists priority orders be issued by the Interstate Commerce Commission for coal shipments to great centres of population such as New York or Chicago.

"That the Anthracite Producers' Association be requested to direct their constituent members to sell coal only to regularly-established dealers or distributors."

The committee reported that the shortage is not likely to be lifted before Dec. 15; that New York had received only 2,310,000 tons of anthracite against its allotment from the Coal Producers' Association of 8,000,000 tons and that a large portion of the tonnage received was steaming sizes —buckwheat and rice—and was obtained from washeries.

Commissioner Copeland announced that he did not approve of the committee's recommendation regarding strikes and vacations.

Coke Co. Cites Car Shortage Asking Supreme Court Review of Damage Award

IN THE U. S. Supreme Court Nov. 22 the Producers Coke Co., of Pennsylvania, requested a review of the decision of the Circuit Court of Appeals, Third Circuit, which awarded $60,000 damages against the coke company in favor of the McKeefrey Iron Co., of Delaware, for failure of the coal company to deliver part of the coke specified in three contracts in 1918. The coke company argues that the case was decided by the lower court on erroneous assumptions, among them that the contracts, being between dealer and consumer, should not receive the same consideration as would like contracts between manufacturer and consumer. It says the contract is in general use in the coal and coke trade and the extent of the questions involved are of great importance.

It also is set out that the Court did not give due consideration to section 44 of the Uniform Sales Act of Pennsylvania of 1915, which provides that where the seller delivers to a buyer goods less than he contracted to sell, the buyer may reject them, but if the buyer accepts or retains the goods, knowing the selling will not perform the contract in full, he must pay for them at the contract rate. The coke company says the payment of the contract price was voluntary and a waiver of the right to recover damages for short deliveries, which were caused by a car shortage. It is also insisted that it was the duty of the buyer to furnish cars. In this case 4,000 tons were contracted for, of which 3,597 tons were delivered.

LARGE STOCKS OF Turkish coal are accumulating at the mines, causing considerable inconvenience to the producers, according to a report of the National Bank of Turkey. The market was well stocked with Turkish coal early in October. American coal was also well stocked. Several cargoes were shipped to the Mediterranean, but could not be sold there, and have come on the market, the result being that New River Standard Navy could be obtained at 210s. per ton f.o.b. Considerable quantities of coal have been purchased by the Crimean Government for its mercantile fleet, railways and for domestic use. As much as $41 was paid for Pocahontas, although a later cargo was purchased at $33 c.i.f. Sebastopol.

CHINESE COAL HAS recently been shipped to Great Britain as an experiment. Over 100,000 tons has been consigned to Newcastle-on-Tyne. It is said that the coal is "of excellent quality, and, imported in larger quantities, could be sold at cheaper rates than British coal."

A REPORT FROM Paris says that in view of the necessity of increasing the purchases of American coal in order to constitute winter stocks, the rebate on such coal is increased to 150 francs per ton up to Jan. 1, 1921. This rebate will be paid on all coal discharged in French ports between Nov. 1 and Dec. 31, 1920. This rebate consists of a refund to importers of American coal. On the other hand, a surtax is applied to French, Belgian and Saar coal so as to compensate for the rebate on American and British coal.

Foreign Markets and Export News

Japan Inquiry Is Quiet; Kaiping Shipments Restricted; Fushun Coal in Better Call

According to the report of Wheelock & Co. issued Oct. 7 at Shanghai the Japanese coal market continues very quiet. There has been no new business done of any sort and native dealers are not inclined to buy.

Fushun coal has been a little more active lately, with some cargoes selling for delivery to Shanghai and outports.

Military requisition of rolling stock is still restricting the regular transportation of Kaiping coal from mines to port of loading, thereby limiting deliveries locally.

Coal prices are quoted as follows:

JAPAN COAL

Miike lump	ex wharf	Contracted for
Miike small	ex wharf	Contracted for
Miike dust	ex wharf	Contracted for
		Taels per Ton
Kishima lump	ex wharf	15.00
Shakano lump	ex wharf	13.00
Arate lump	ex wharf	12.00
Shimoyamada Kirigomi	ex wharf	11.00
Shin Shakano Kirigomi	ex wharf	11.00
Yoshinotani No. 1 lump	ex wharf	12.00
Yoshinotani No. 2 lump	ex wharf	10.00
Ochi lump	ex wharf	12.00

KAIPING COAL

	Taels per Ton ex Wharf
No. 2 lump	13.50
Washed nuts	13.50
Washed slack	10.50
No. 1 slack	9.00
No. 2 slack	8.50

FUSHUN COAL

	Taels per Ton ex Wharf
Dust	10.00
Dust Kirigomi	Contracted for
Dust lump	No stock

The coal output for the first three months of this year is given as 6,768,000 tons from mines in Japan, Korea and Formosa. This is an increase of 211,000 tons over the output of the corresponding period of last year. Kyushu mines produced 4,309,000 tons, a decrease of 109,000 tons as compared with the corresponding period of last year. Tokiwa mines produced 725,000 tons, showing a decrease of 27,000 tons as compared with the corresponding period of last year. The Hokkaido output is the only one that has increased. The output for the first three months was 1,018,000 tons, showing an increase of 259,000 tons.

Sarre Coal Output Improves Under French Rule

(Special to Coal Age)

The Sarre district, the third largest of Germany's coal resources, is, according to the Peace Treaty, under French administration. One of the first steps of this administration was to see that the miners were paid in French currency, which at the present rate of exchange means that their wages are considerably higher than the corresponding German wages. This fact was severely felt by the other industries as the workmen naturally are envious of the high wages the miners receive and ask equal wages in French currency. This movement in the course of a short time will put the highly developed machine-building industry of the Sarre district beyond competition as far as Germany is concerned and will make it part and parcel of the French industries.

The result is that the Sarre mines have no great difficulty in obtaining all the labor they want. Besides they enjoy the advantage of a 9- and 10-hour shift as compared with the 7- and 8-hour shift in Germany. Labor conditions under the strict French rule have been settled, but the railway strike caused a loss of output estimated at 125,000 metric tons. The monthly output of the Sarre mines in 1920 was at an average 750,000 tons. The highest output, 860,000 tons, was in July. The total production of coal of the Sarre mines in the first eight months was more than 6,000,000 tons. This is a slight improvement compared with the previous year when the total production was 8,970,000 tons. The output of the pre-war years, which averaged 11,000,000 tons and was highest in 1913, has, however, not been reached yet.

Increased production in the Sarre has lately enabled the French administration to reduce the price of Sarre coal for delivery to France, Luxemburg and Switzerland.

Freight Market Is Steadily Crumbling

According to W. W. Battie & Co.'s weekly coal trade freight report, new low levels are being reached almost every day, the freight market steadily crumbling. Steamers are offering freely and the only sign to indicate that the market will not drop to very much lower levels is the fact that some owners had already commenced to tie up their steamers as they say they are unable to operate profitably on the present basis of freights.

Freight rates by steamer follow:

	Nov. 15	Nov. 22	Tons Discharged Daily
Malmo	about $12.00	$10.50/11.00	1,000
Copenhagen	about 11.50	about 10.50	1,000
Stockholm	about 11.50	about 10.50	800
Gothenburg	about 11.50	about 10.50	1,000
Antwerp/Rotterdam	8.25/ 8.50	7.00/ 7.50	1,000
Hamburg	about 9.50	about 8.50	1,000
French Atlantic ex Rouen	8.75/ 9.00	7.75/ 8.25	700
Algiers	about 11.00	9.50/10.00	800
West Italy	about 11.00	9.50/10.00	1,000
Marseilles	about 11.00	9.50/40.00	1,000
Piraeus	about 12.50	about 11.50	1,000
Trieste/Venice	13.50/14.00	12.50/13.00	1,000
Port Said	12.00/13.00	11.00/12.00	1,000
Constantinople	about 14.00	about 13.00	500
Gibraltar	about 10.50	about 9.50	1,000
Pernambuco	about 11.50	10.25/10.75	500
Bahia	about 11.50	10.25/10.75	500
Rio	about 10.50	about 10.00	1,000
Santos	11.00/11.50	10.25/10.50	600
Buenos Aires, Montevideo or La Plata	about 10.50	about 10.00	750
Para	about 11.50	about 10.50	500
Rosario	11.00/11.50	10.25/10.50	750
To Nitrate Range	8.00/ 8.50	7.50/ 8.00	500
Havana	about 6.00	about 6.00	500
Sagua or Cardenas	about 7.50	about 6.75	300
Cienfuegos	about 7.00	about 6.75	500
Caibarien	about 7.00	about 6.50	300
Guantanamo	about 7.00	6.50/ 6.75	500
Manzanillo	about 7.50	about 7.50	300
Bermuda	about 7.00	about 6.50	300
P. c. and dis. free Kingston	about 8.25	about 7.50	400
Barbados	8.00/ 8.50	7.50/ 8.00	500
St. Lucia	8.00/ 8.50	7.50/ 8.00	500
Santiago	about 7.00	about 7.00	500
Port of Spain, Trinidad	8.00/ 8.50	7.50/ 8.00	500
Curacao	about 8.00	about 7.00	500
Free p. c. Curacao. St. Thomas	about 7.25	about 7.00	500

FRENCH COAL IMPORTS during October amounted to 1,670,000 tons, an increase of 500,000 tons over September. Of this amount the United States furnished 614,000 tons against only 307,000 in September. The remainder comprised 803,000 tons from Great Britain and 253,000 from Germany.

WITH COAL AS high as $40 a ton Sweden is interested in getting the greatest use out of coal and its conservation. With this end in view it has sought the advice of the U. S. Bureau of Mines. Prof. Axel F. Enstrom, Director of the Royal Swedish Academy of Scientific Industrial Research of Stockholm, Sweden, recently conferred with Assistant Director Holbrook of the Bureau of Mines on matters pertaining to fuel research and conservation. He was referred to the National Research Council for further counsel.

Anthracite Joint Scale Board to Confer with Secretary Wilson on Disputed Points

SECRETARY OF LABOR WILSON has invited the joint scale committee of the anthracite operators and miners to a conference with him in Washington at 2 p.m., Dec. 1, on the disagreement between the miners and operators as to adjustment of alleged inequalities in the wage award among the anthracite miners. A committee representing the miners saw the Secretary of Labor Nov. 24 and requested interpretation of the President's letter reopening the wage award, over which the conference of miners' and operators' representatives at Philadelphia became deadlocked.

Mr. Wilson decided to ask both parties to the controversy to confer on the question in the hope of reaching an adjustment of the disputed points. Thomas Kennedy, president of the miners' scale commitete; John Collins and C. J. Golden, district presidents of anthracite miners' unions, and P. F. Hanaway, international representative of the United Mine Workers, comprised the miners' committee which took up the question Nov. 24 with Mr. Wilson.

Army Offered Bituminous at $4.50 Per Ton; May Place Contracts in Spring

ALTHOUGH the army has placed contracts for its coal requirements until June 30 next an occasional offer of coal is being received. Last week an operator offered the army 50,000 tons of bituminous at $4.50 a ton. It is estimated that the army camps and stations have a 169 days' supply of bituminous coal on hand and 130 days' supply of anthracite, which is sufficient to meet all needs for fuel until next year's purchases are made. It is estimated the army saved $4,800,000 over the market prices in its fuel purchases this year. War Department officials are said to have no part in the criticism which is being leveled at coal operators because of high prices. It is understood they feel that the operators are not profiteering but that the exorbitant level of prices is due in large measure to the methods of unscrupulous middlemen between the producer and consumer.

Anthracite fuel briquets as a substitute for anthracite coal for army posts, stations, camps and hospitals in the Central and Southeastern departments is being considered by the War Department. Colonel J. P. Barney, in charge of fuel for the army, believes the briquets offer a solution to the problem of supplying anthracite coal to these sections of the country and is looking into the matter with a view of using briquets to save the freight rates on anthracite coal from the East to the Central and Southeastern sections.

Colonel Barney has taken up the matter with manufacturers of briquets located on the Norfolk & Western R.R. in Virginia; in Superior, Wis., and Kansas City, Kan. He has purchased a carload of the briquets at $7.50 a ton and will have tests made of the fuel at a number of selected army camps.

Colonel Barney believes the briquets will be satisfactory for army requirements, stating that tests made of the fuel by the Bureau of Mines has proven satisfactory, the briquets having a B.t.u. analysis higher than the average anthracite, the briquets running better than 14,000 B.t.u.

The War Department estimates that it will require 2,000,000 tons of bituminous and 400,000 tons of anthracite coal for the year beginning July 1 next, and will ask Congress to permit it to place contracts for this coal in March and April instead of after July 1, when the appropriation will become available. The plan is to have the coal delivered to the camps in the summer months, when more reasonable prices could be obtained than in winter, and to relieve the demands of railroads and operators at a time when commercial demand for coal is heavy.

Engineers Urge Seasonal Differentials in Prices and Freight Rates

CONCLUSIONS of the Committee on the Stabilization of the Bituminous Coal Industry of the American Institute of Mining and Metallurgical Engineers, which have the approval of Herbert Hoover, have been published. This statement, which follows in detail, was forecast in Mr. Hoover's address before the Federated American Engineering Societies and in the report of the meeting of this committee, published in *Coal Age* of Nov. 25, p. 1107:

(1) That the bituminous industry by the nature of its organization functions economically in a too inefficient manner. Employment in the industry averages less than 220 days per annum, with a minimum district average of less than 200 days. Thus a labor staff and capital investment of fully 30 per cent more is required than otherwise would be necessary. From this flow a high daily wage, a considerable portion of the just complaints of labor and a higher cost of coal to the consumer.

(2) The causes are very largely: (a) Intermittency in seasonal demand; (b) irregularity of car supply, and (c) lack of storage facilities and incentive for their use.

(3) The cure lies in:

(a) The co-operation of railroads in the establishment of seasonal differentials in rates that will induce summer demand.

(b) Increased transportation facilities and more efficient and equitable distribution of cars.

(b¹) Increased use of central and interconnected electric power plants.

(c) Lower selling prices in dull seasons, made possible by differentials in profits, freight rates and wages.

(d) Recognition by the larger consumers, such as the federal, state and municipal institutions; railroads, public utilities and industrial plants, that not only continuity of operation, but also the safety of the public from the stoppage of supply, demands that they provide adequate storage to be replenished in the dull season.

(4) Such storage is feasible and can be made financially remunerative by differential rates and prices. Public safety demands the installation of storage facilities at the place of consumption.

(5) No adequate solution can be found except through organized co-operation of operators, labor, railroads and large consumers. Under existing laws as to combinations such co-operation cannot be carried on. Therefore we believe that some federal legislation is necessary permitting such co-operation under competent governmental authority.

U. S. Judges Enjoin Indiana Fuel Commission

Temporary Injunction Granted in Vandalia and Vigo Companies Case Limits Board's Authority to Coal Bought Since the Commission's Creation — Foreshadows Death of the Law Next March

IN ONE of the most important coal rulings of the last decade, three federal judges granted a temporary injunction in Indianapolis Nov. 27 in the suit of the Vandalia Coal Co. and the Vigo Coal Products Co., two Vigo County companies, against the Special Fuel and Food Commission created by the last special Legislature of Indiana to fix prices and govern distribution of coal mined and sold in Indiana.

The order enjoins the commission from issuing any orders allocating to consumers in Indiana coal which was contracted for interstate delivery before the creation of the commission two months ago. The price-fixing power of the commission was not interfered with by the court order.

The principal point involved was the question as to whether the state had taken the property of one person, firm or corporation and given it to another, the property not having been used for a public purpose. It was evident early in the hearing that this was the main question to be decided. Judge Francis E. Baker of the Circuit Court of Appeals, of Chicago, Ill., held that there is no debate to the contention that the Legislature is legally without power to take over the property of one individual and give it to another for a "private purpose."

Resort to Police Power Held Unwarranted

The arguments were heard also by Judge George T. Page, of Peoria, Ill., and Judge A. B. Anderson, of the U. S. District Court of Indiana. For the plaintiffs arguments were made by Charles Martindale, of Indianapolis, and George Sutherland, formerly U. S. Senator from Utah. James W. Noel and Howard S. Young, both of Indianapolis, presented arguments for the Fuel Commission.

Mr. Sutherland for the plaintiffs asserted that coal mining does not have sufficient public interest to warrant a resort to police power by the Legislature in enacting a law for the regulation of prices and distribution. He contended that the operators have a right to sell their coal for whatever price they can get on contracts and to the market at the market price. He added that he referred to a "free market." He indicated that in case an injunction was not granted the case would be appealed to the U. S. Supreme Court.

While state officials would make no statements, it is generally understood that the direct effect of the ruling will be to permit the law to die a natural death March 31 next, when it expires under the wording of the Legislative act unless the next general session continues the commission, which is not likely in view of the court decision.

The attorneys for the Fuel Commission in their brief and arguments submitted that private property is clothed with a public interest when used in a manner to make it of public concern and when the use of it affects the community at large. When that is the case, private property becomes subject to regulation under the police power of the state, they asserted, and regulation then is not in violation of the fourteenth amendment to the Federal Constitution. They further contended that the police power of the state is not a fixed quantity, but is the expression of social, economic and political conditions, and is an established principle in social science, which must be elastic and capable of development in application to meet changed conditions and commercial progress.

The bill of complaint which the plaintiffs filed showed that the plaintiffs have a capacity to produce more coal than all their contract requirements, their alleged orders and emergency orders of the commission combined. The bill also attacked the constitutionality of the law and of the orders of the commission made under the law. At a former hearing the court upheld the right of the Legislature to enact the law, and the present hearing dealt particularly with the administration of the law.

Mr. Martindale in his argument for the plaintiff companies reviewed the causes leading to the passage of the act and declared that the plea of his clients showed that the only causes for complaint were due to the mine strike in 1919 and in the early part of 1920, the disruption of transportation facilities as the result of the railroad switchmen's strike, and insufficient cars.

"Nothing has been done to remedy the underlying causes of the evil," he contended. "Nothing has been done to supply cars. If such action had been suggested prior to 1914 the person suggesting it would have been declared a dangerous and an undesirable citizen. The power here exercised is arbitrary and enforces unreasonable restrictions on private business."

Plaintiffs Allege Unreasonable Interference

Some of the main points brought out by the attorneys for the plaintiffs were: That the act of the Legislature is invalid because it permits of arbitrary and unreasonable interference with the rights of the plaintiffs to freely engage in business; that the $25 license fee required is in excess of the cost of issuing the license; that section 7 of the act is invalid because it requires the plaintiffs to pay a license fee beyond the period fixed for the expiration of the commission; that it prevents the coal companies from the liberty and freedom to contract for the sale of their property; that it compels the coal companies to furnish a sufficient quantity of coal to supply domestic demand regardless of existing contracts held by the coal companies; that no provisions are made to control payment for the coal by those to whom the commission orders coal to be shipped; that no mine owner could afford to disobey any order of the Fuel Commission or invoke the jurisdiction of any court to test the validity of the law, except at the risk of confiscation of its property and imprisonment for a long term; that the orders of the commission impaired the obligations now existing between the plaintiffs and the Ogle Coal Co. and the Pennsylvania Railroad Co.

The plaintiffs' attorneys showed cases where the coal companies had been ordered to ship coal to a retailer at a fixed price by the commission when often no business connections ever had been established between the operator and dealer before and his credit standing had not been ascertained.

Open-Top Cars Available to All Industries Now; Order 20 Cancelled November 29

SERVICE Order No. 20 was lifted by the Interstate Commerce Commission, effective Nov. 29. The order had been amended previously, so that at the time of its cancellation, ordered Nov. 27, it gave coal mines preferential use of hopper-bottom cars only. The Interstate Commerce Commission expressed the opinion that the coal situation had reached the point where the requirements of the country could be supplied with the cars which would be available under normal regulations. This view is not shared by many who are following the coal situation closely. It is believed that the public would have been more amply insured against inconvenience had the coal mines been assured of ample car supply for a few weeks longer. It is feared that an abnormal proportion of open-top equipment will be used to move commodities other than coal which have been accumulating during the period that this type of equipment was reserved largely for coal transportation.

On the other hand, it is pointed out that the building trades are not active during the winter months and that little highway construction is in progress. Some are of the opinion that the lifting of the order will make little difference as to the number of cars available for coal. There is at least the assurance that the order can be reinstated at any time the Interstate Commerce Commission should feel that conditions require it.

Commodities Other Than Coal Absorb Open Tops

Some are of the opinion that the demand for open-top cars for transporting commodities other than coal will be light this season of the year and that many of the flat-bottom coal cars still should be available for coal transportation. Reports are beginning to come in to the effect that all available open-top cars are being absorbed quickly for hauling other commodities. This has worked particular hardship on such roads as the Hocking Valley and the Toledo & Ohio Central, whose open-top cars are not equipped with hopper bottoms. In addition, there are scattering reports as to car shortage at the mines.

At the National Coal Association the opinion is expressed that "we are not out of the woods in the matter of coal distribution." The situation is improving markedly each day, it is said, but there is still a great deal of coal which must be in the hands of consumers before the first of the year. The unusually mild weather for this season of the year has prevented any accentuation of the shortage of supplies in the hands of domestic consumers. Sight must not be lost of the fact that only partial deliveries have been made on domestic orders, so that each consumer could be supplied with enough coal for immediate requirements.

Reports have been current that transportation on many of the coal-carrying roads is being handicapped by lack of locomotives. It can be stated quite positively, however, that there is no significant shortage of power. As a matter of fact, a number of Western railroads have more locomotives than they need at this season of the year and have tendered them to Eastern roads for temporary use. No applications for these locomotives have been received.

No Shortage of Locomotives Observable

The trouble earlier in the season on the Chesapeake & Ohio and the Norfolk & Western was due largely to difficulties on account of water, a condition which is of annual occurrence in the late autumn. No power difficulties are being experienced by either of these roads at the present time. The rapid development of coal operations on the Louisville & Nashville has taxed all the facilities of that road, but as no advantage has been taken of the opportunity to borrow engines, it is assumed that no serious shortage of locomotives exists. The percentage of locomotives in the shops is somewhat high, but it is pointed out that that usually is the case at this season of the year, when locomotives are being put in the best possible shape for the more severe service of the winter season.

The notice announcing revocation of Order 20 was as follows:

"It appearing that the emergency which caused the commission on the 8th day of October, A. D. 1920, to make and enter its Service Order No. 20 and the amendments thereto made and entered on the 6th day of November and the 15th day of November, 1920, has been measurably relieved:

"It is ordered that the said Service Order No. 20, as amended, be, and the same is hereby, vacated and set aside, effective at midnight, November 29, 1920.

"It is further ordered that copies hereof be served upon the carriers upon whom Service Order No. 20 was served and that notice hereof be given to the general public by depositing a copy of this order in the office of the secretary of this commission."

Laclede Gas Co. Denied Assigned Cars; Service Order 21 Cancelled

JUST prior to the cancellation of Service Order No. 21, authorizing the use of assigned cars by public utilities which could not get their coal through regular commercial channels, the Interstate Commerce Commission granted a hearing on what was regarded as a typical public-utility claim. The Laclede Gas Co., of St. Louis, applied for assigned cars for use in transporting gas coal from the Kentucky fields to St. Louis. The commission denied the application. It is understood that inquiries were made by the commission which developed that gas coal was available in the St. Louis market in quantities more than sufficient to meet the immediate needs of the company.

Coal Company Officials Agree To Co-operate

E. H. Mahan, president of the Southern Coal & Coke Co., E. R. Clayton, secretary of the Harlan County Coal Operators' Association; R. A. Hord, secretary of the Hazard Coal Operators' Exchange, and J. E. McCoy, secretary of the Southern Appalachian Coal Operators Association, were present at the hearing and agreed to do everything within their power to facilitate the movement of gas coal on the Laclede Company's contract.

The day following the commission's announcement denying the application of the Laclede Gas Co., Service Order No. 21 was cancelled. It is of some significance that the order was canceled rather than suspended. Apparently the Interstate Commerce Commission is firmly convinced that the emergency has passed so far as the public utilities are concerned.

The suspension of Service Order No. 21 automatically abolishes the two co-operative committees which were looking after the needs of public utilities. The National Coal Association, however, will continue to handle any complaints turned over to it by the National Committee on Gas and Electric Service and will request operators to ship coal to any utility which is unable to fill its coal needs through regular channels.

Only Utilities Using Gas Coal Now Short

The only utilities now calling on the National Committee on Gas and Electric Service for assistance are those using gas coal. Much difficulty is being experienced by utilities dependent upon the Kentucky gas coal fields. Some trouble of this character continues with companies dependent upon Pennsylvania gas coal fields.

Federal Troops Back in Matewan District

IN FACE of protests from Mingo County officials, who asserted that the situation was being well handled, Governor Cornwell on Nov. 26 called on the President for troops to patrol the county. As will be remembered, troops were kept in the county till Nov. 5. On their withdrawal lawlessness was resumed, several persons being killed, including a member of the state constabulary. The Governor accordingly refused to temporize. A provisional battalion of 400 picked men from the Third and Nineteenth infantry regiments left Camp Sherman, near Chillicothe, Ohio, for Williamson, W. Va., and arrived Nov. 28. Major R. S. Binford, of the Nineteenth Infantry, and Captain E. L. Brine, of the Fortieth Infantry, will investigate.

One of the outrages that induced the Governor to call in the military forces occurred on Thursday, Nov. 18, when Ernest D. Rippley of the state police of West Virginia was shot to death by Bill Hatfield and W. B. Cole.

Cole was placed under arrest by State Policeman William Curtis, who had been stationed at Vulcan with Rippley. When arrested Cole had one of Rippley's pistols in his possession. Rippley is the first member of the state police who has been killed while engaged in the performance of his duty.

Another more recent incident which had its effect in convincing the Governor that troops were needed was an attack on the men working at the tipple of the White Star Mining Co., at Merrimac, Nov. 22. No one was hit, but the tipple was riddled with bullets. On another occasion three "transportation" men at work for the Standard Thacker Coal Co. at Chattaroy were attacked by strikers and after being assaulted fled into nearby hills.

On Nov. 23 Taylor Munsey, a non-union miner, shot and killed Irvin Elkins on a Norfolk & Western R.R. train between Nolan and Chattaroy. Four non-union men, among whom was Munsey, were attacked at Nolan station by a crowd of strikers. State police interfered and stopped the fight, but when the non-union men got aboard a train some of the strikers jumped on, and when they termed Munsey a "scab" he pulled out his gun and shot Irvin and Joe Elkins. After Munsey had been lodged in Williamson jail, strikers assembled and threatened to remove him from the jail and lynch him.

Operators Urged to Supply East with Prepared Sizes of Anthracite

ONE of the first efforts of the Anthracite Fair-Practice Committee has been directed toward equalizing distribution. It appears that the Eastern territory is proportionately shorter of domestic sizes than the Western territory; that shipments to the West are more nearly equal to those of previous years, and that the Eastern section has suffered more than its share by the decrease in production of this year. The attention of the operators and shippers of anthracite has been called to this matter by the Fair-Practice Committee, and they have been urged to concentrate the movement of prepared sizes of hard coal to the Eastern territory for the next three weeks, at the end of which time it is believed the deficiency can be supplied.

Lifts Ban Against Reconsignment of Freight in Open Tops; Commission Issues Special Permission 51,143

ISSUING Special Permission No. 51,143, Friday, Nov. 26, the Interstate Commerce Commission lifted the ban against reconsignment of freight in open-top cars. In explaining the position of the commission in this matter Chairman Clark has written Daniel Willard as follows:

"After study of the situation and conferences the commission issued, on Aug. 9, 1920, its amended Special Permission No. 50,320, authorizing carriers to establish on less than statutory notice emergency rules applicable on all freight in open-top cars and on coal and coke in all cars. These rules were generally established shortly thereafter.

"Inasmuch as this permission was sought and issued as an emergency matter we have kept in immediate touch with the situation, anticipating the time when the emergency should have passed in such measure as to justify cancellation of measures adopted to meet the emergency. We have had this question of emergency reconsigning rules and charges actively before us for some time; we have had some conferences between representatives of the railroads and of the shippers with regard thereto; and we are convinced that the emergency which prompted the authorization of these rules has in large measure passed. This is evidenced by the fact that we cancelled our remaining outstanding Service Order No. 20.

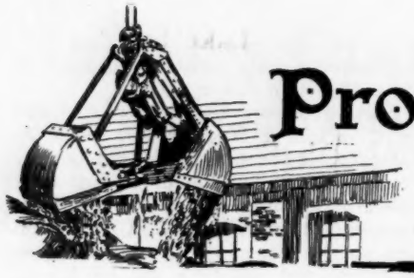
"It is admitted by all concerned that these reconsigning rules and charges were emergency measures which ought to be abated with the passing of the emergency. These rules were established in the tariffs without an expiration date. We assume, however, that, in view of the manner in which they were established, our recommendation for their cancellation will be recognized by the carriers, which recognition will avoid formal complaints against them which would certainly be filed and would perhaps be difficul to defend. I am authorized by Division 5 to recommend to the railroads generally through you that the emergency reconsigning rules and charges published by virtue of our amended Special Permission No. 50,321 of Aug. 9, 1920, be cancelled at the earliest practicable date. To that end we are issuing our Special Permission No. 51,143, authorizing the cancellation on not less than one day's notice of the reconsigning rules applicable on all freight in open-top cars and on coal and coke in all cars which were authorized by our special permission of Aug. 9, above referred to. This special permission will also authorize the cancellation of these rules in instances, if any, in which they were published on statutory notice and not by virtue of our special permission."

George H. Cushing, the managing director of the American Wholesale Coal Association, and members of his committee told the commission that the greatest difficulty is being experienced since coal is now available in such quantities that refusals to accept shipments are not uncommon. In such cases it is practically necessary to have recourse to the reconsignment privilege.

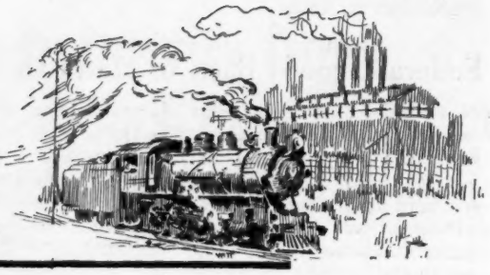
AT FIVE MINES in Tshikawa, Japan, four thousand miners went on strike for an increase in wages Nov. 26. Two labor leaders left Tokio to organize the workmen.

Shipping Board Asks for Coal Bids

BIDS to cover 2,234,000 gross tons of bituminous coal have been called for by the Shipping Board. Bids will be received until 1 p.m., Dec. 10, 1920, at the office of the Emergency Fleet Corporation, Washington, D. C. All the coal is to be supplied at fifteen designated ports from Sydney, N. S., to Port Arthur, Texas, the bulk of it, however, being required at New York, Philadelphia, Baltimore, Norfolk and New Orleans. Coal supplied north of Charleston is to be from pools 1, 2, 2B, 4, 9, 10, 11 and 71, provided, however, that not more than 20 per cent of the total quantity supplied shall be from pool 11.



Production and the Market



Weekly Review

CONDITIONS in the coal industry from a seller's viewpoint were more encouraging last week. The spot market ceased its downward movement, which had been rapidly approaching the danger mark, at least for the smaller producers. While prices sought a still lower level, there was evidence in later quotations of a fairly stable market.

Demand was extremely sluggish, but current buying had already been reduced to a minimum and producers and jobbers were not willing to make further price concessions in pushing the sale of their coal. All the larger centers are in much better shape as regards domestic stock and with the easier movement no anxiety is now felt about winter requirements.

Railroad Equipment Undergoes Repairs

Railroads are reducing their working forces or replacing inefficient men with former workers who had been lured by higher wages to industries which are now closing or curtailing operations. Despite reports given out in Washington to the contrary, motive power is feeling the strain of the record-breaking traffic movement which reached its climax late in October and engines and rolling stock are being withdrawn from service and placed in repair shops whenever possible.

Many reports have been coming in to the effect that the wave of business depression is being reflected in a declining freight movement, with corresponding decrease in railroad fuel consumption. According to *Railway Age*, in the week ended Nov. 6 the number of freight cars loaded was 910,592, the highest record ever made in that week.

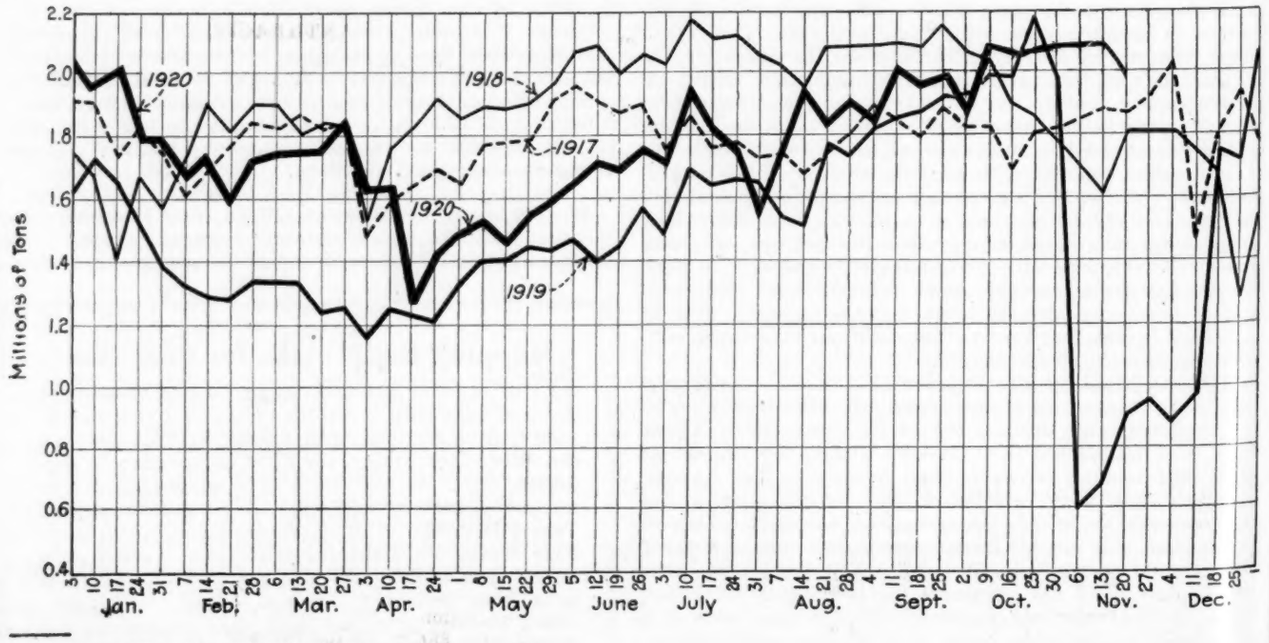
The Indiana Fuel and Food Commission has been enjoined from issuing any orders allocating to consumers in Indiana coal which was contracted for interstate delivery before the creation of the commission two months ago. This will place Indiana producers on an equal footing with others, permitting them to ship coal outside the state, where they may enjoy competitive prices.

Labor is working with a greater degree of efficiency than for some time past, as indicated by satisfactory reports from all sections. The one exception is the strike zone in the Thacker field of West Virginia, where it has been necessary to recall the Federal troops.

French Dealers Cancel Shipments

Exporters are finding an extremely quiet market abroad. France is becoming stocked to such an extent that she can await results of competitive offers of British and American coal. French dealers have canceled some shipments en route. A few vessels were diverted to Spain and Italy, but the total of 80,000 tons now on the

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Lake Coal Dumped Season to Nov. 27

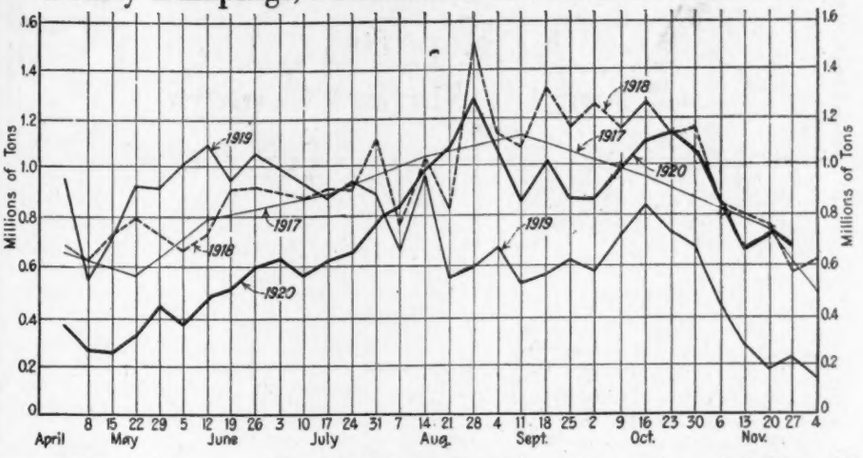
(NET TONS)

	1919	1920
Total	22,746,723	22,957,415

Week of Nov. 27, 1920

Cargo	656,472
Fuel	27,148
Total	683,620

Weekly Dumpings, Bituminous Coal at Lake Erie Ports



water will have to seek markets in competition with a new British rate of less than $20.

Anthracite demand continues strong; however, Eastern stocks are much improved following the Anthracite Fair Practice Committee recommendation that shippers concentrate movement of prepared sizes to Eastern territory for the next three weeks. The Middle West is in good shape, with adequate bituminous stocks to fall back upon in the event of any shortage of hard coal.

BITUMINOUS

Production of soft coal dropped back to 11,770,000 net tons during the week ended Nov. 20, according to the Geological Survey. This is a decline of 371,000 tons as compared with the output of the preceding week. Production in the West was heavy, the decline centering in the Northern and Middle Appalachians, particularly in the Pocahontas railroad region. Late reports for the first two days of the week of Nov. 22-27 indicate heavy production. The total for the week, however, was cut by the Thanksgiving Day holiday.

LABOR SHOWS INCREASED EFFICIENCY

Labor is working much more steadily. The former indifferent attitude of the miners has almost entirely disappeared and with so many men seeking employment working efficiency is mounting daily.

Car shortage is growing throughout the Northern and Middle Appalachian regions, where poor transportation conditions further hampered the placement of empties and disposition of loads. Middle West and South report better car supply with resulting heavy production.

Prices continue to shade off slightly, although an effort apparently is being made by producers to stabilize the market. A better contract movement has followed the declining spot demand and Western centers generally are experiencing heavy receipts because of an embargo on Eastern and Tidewater shipments from the Middle Appalachian section. With the unseasonable weather which is prevailing the domestic demand has fallen off considerably, although prices for prepared sizes have remained practically unchanged. Industrial contraction continues, and this is responsible for a slight further easing of steam prices.

The following table shows the trend of the spot steam market in various coals (mine run basis, f.o.b. mines):

	Nov. 1919*	May 1920	Aug. 5 1920	Oct. 28 1920	Nov. 25 1920	Dec. 2 1920†
Pittsburgh steam	$2.30	$4.00	$10.00	$8.00	$5.00	$5.00
Pittsburgh gas	2.30	4.50	12.00	8.50	5.75	*5.50*
Hocking	2.50	4.75	9.00	6.00	4.50	*4.50*
Franklin, Ill.	2.35	3.75	6.50	6.00	5.00	5.00
Indiana 4th vein	2.35	3.40	7.50	6.00	4.25	*4.00*
Eastern Ohio, No. 8	2.35	4.50	10.50	6.00	5.00	5.00
Fairmont	2.50	6.75	13.50	10.00	**4.75**	4.75
Kanawha	2.60	6.75	14.00	7.50	4.75	4.75
S. E. Kentucky	3.00	6.00	10.50	6.00	5.00	**5.25**
Western Kentucky	2.35	3.50	5.25	6.25	**4.25**	4.25
Clearfield	2.95	6.25	12.00	8.25	5.00	5.00
Cambria and Somerset	2.95	6.75	13.50	9.25	6.00	6.00
New River	2.70	6.50	14.00	10.75	5.00	**5.25**
Pocahontas	2.35					

*Government prices.
†Advances over the previous week shown in **heavy type**, declines in *italics*.

Lake coal dumped during the week ended Nov. 27 amounted to 683,620 tons, as compared with 157,819 tons for the corresponding week of last year. Total dumpings so far this season amount to 22,957,415 tons; for the same period last year they were 22,746,723 tons. Interest centers in the cumulative movement for the year, which is about 7,000,000 tons behind 1918, but has overtaken 1919.

A further decrease marked Tidewater shipments during the third week in November. According to the Geological Survey total dumpings were 1,141,000 net tons, which is 16,000 tons less than the preceding week and 234,000 tons less than the third week in October, after which the decline began. The decrease was wholly in export and bunker coal, the former falling off 10,000 and the latter 34,000 tons. Shipments to New England increased 7,000 tons. Tonnage dumped at Tide was handled as follows:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Coastwise to New England	61,000	18,000	7,000	83,000	.....	169,000
Exports	4,000	75,000	159,000	286,000	8,000	532,000
Bunker	92,000	15,000	13,000	67,000	2,000	189,000
Inside capes	.....	47,000	26,000	5,000	.....	78,000
Other tonnage	166,000	.....	.....	.....	7,000	173,000
Totals	323,000	155,000	205,000	441,000	17,000	1,141,000

All-rail New England shipments declined 304 cars during the week. As reported by the Geological Survey, 4,469 cars were forwarded through the five Hudson gateways, as compared with 4,773 in the preceding week. Shipments during the corresponding week of 1919 during the strike were 2,985 cars; in 1918 they were 3,039 cars.

ANTHRACITE

With an estimated production of 1,975,000 net tons during the week ended Nov. 20 the output has again reached normal. To handle this tonnage 37,762 cars were loaded, an increase of 4,238 cars when compared with the preceding week. Cumulative production for the coal year to date is 55,848,000 tons, as against 59,665,000 for the same period in 1919. Emergency shipments to Eastern points have relieved any possibility of a hard coal shortage. Some care is being exercised in apportioning receipts to needy consumers but a continuance of the diversion for a period of three weeks, as requested by the Fair Practice Committee, will provide an ample supply for all. Under the pressure of this movement premium-priced independent coal is selling off at $11.60@$13.

COKE

Beehive coke produced during the week totaled 365,000 net tons, according to the Geological Survey. This is a decrease from the revised figures of the preceding week of 15,000 tons, or about 4 per cent. The decrease was general except in the Western states where no change was reported.

The spot furnace coke market has been maintained during the week by operators blowing out ovens and adjusting production to the greatly reduced demand. Market is quotable $8@$8.50 for furnace and $9.50@$10 for foundry coke.

Reports From the Market Centers

New England

BOSTON

Market Continues Unchanged — Slack Demand in Most Directions—New England Receipts Now Practically Confined to Contract—Prices Shade Off on Ordinary Grades — Anthracite Shipments Still Discouragingly Light.

Bituminous—A careful canvass discloses no new developments. The market is as quiet as normally it would be in midsummer and there are no indications of improvement during the next few months. Industrially, New England is under vigorous curtailment and until there is a broader market for finished products, there can be nothing more than a straggling demand for steam coal. Railroads also are using less fuel than anticipated and there seems no possible change that will influence buying at an early date.

Except for moderate inquiry for bunker grades there is a dearth of business in all directions. Both all-rail and by water the light demand is confined to small steam users who are buying only for current needs. Occasionally there is a larger order in the market but the buyer is well enough informed to hammer down the price until the order is unattractive to most shippers.

Receipts are almost exclusively on contract. Movement through the Hudson River gateways holds up surprisingly well, but is likely to recede during the next fortnight. It has only gone to show that a very heavy proportion of this season's coal has been moving on contract, and that the "scare" of June and July was due rather to apprehension than to any actual shortage at that time. Shipments from Hampton Roads, although occasionally suffering delays at the loading piers, have come forward on contract consistently all through the season. The chief difficulty came through the desire of manufacturers to buy less expensive coal by the all-rail route.

On medium grades from central Pennsylvania prices have shaded off still further. On certain coals, Pools 11 and 14, $4 has been rumored and it is understood by the trade that some operators are very susceptible to offers. If anything, the margin is increasing between high grades and those of inferior quality. In the export market Pool 34, for instance, is practically unsaleable for dumping into off-shore bottoms.

At Norfolk and Newport News there has also been a further easing of prices. Shippers who were charging $11 a fortnight ago for bunker fuel are now accepting business at $8.50. Careful ship-owners are buying very sparingly and at all the piers there is a large volume of coal on hand. Export sales are increasingly difficult to effect, and the predictions in this quarter are for light business until March.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, per net tons	$4.50@5.50	$5.00@ 6.50
F.o.b. Philadelphia, gross tons	7.70@8.80	8.25@10.00
F.o.b. New York, gross tons	8.25@9.25	8.70@10.50

Spot Pocahontas and New River f.o.b. Hampton Roads is quoted at $8.15@ $9.50 per gross ton.

Anthracite—Certain producing companies suspended movement to the Lakes on Nov. 22 and it is hoped this augurs more favorably for shipments to this territory in the near future. It is recognized, however, that there are many other sections to be served and that shipments will continue to be light for some weeks. Retailers are discouraged over the slow movement, but the mild weather is a great factor in their favor.

Tidewater

BALTIMORE

Soft Coal Is Weak and Unsteady, but Short Car Supply Prevents Price Break Renewal—Anthracite Supplies Pouring In—Price Discussions Are Now Rampant.

Bituminous—The soft coal market is showing new signs of weakness here. Demand is unsteady industrially, as many plants are now working but part time. The export demand has also shaded off, apparently under the renewed belief that lower prices are to prevail later. The November record of exports, however, will be good, as there were many ships here at the outset of the month awaiting coal. The daily average of waiting vessels now runs 15@20, instead of 50@60 as was recently the case.

The pool reserve is not heavy, however, running 1,300@2,000 cars daily as a rule. This is due to the fact that the car supply has been very poor. Thanksgiving Day gave a chance to catch up a bit, it is true, but the daily average is around 50 per cent.

Prices are over a rather wide range. Best coals, both steam and gas, are offering all the way from $5@$6, which is about a dollar off the low offerings some ten days ago. Lower grade coals are offering down to $4.25 a net ton f.o.b. mines.

The export business, as spoken of above, has been pretty heavy for the month, the total on 74 foreign-bound coal ships for the first 23 days of November having been 416,604 tons cargo and 27,262 tons bunker fuel.

Anthracite — Hard coal conditions here have eased greatly. Not only has fairly mild weather prevailed, but the receipts have been the heaviest in months. There is now a little coal to go around pretty well to the many empty cellars. A considerable part of the coal coming in is of the company variety, this being the case for the first time in many weeks.

Naturally, with coal coming freely, the object is not now altogether to get supplies, but also covers price costs. This has opened some rather warm discussions of the charges of some dealers over the recognized schedules. Those dealers who, to prevent customers from being entirely left in the coal line, went out and bought high premium coal, are now getting their reward—argument for charging a figure made necessary by their basic purchase price.

It is understood that a report arranged for by the Mayor of Baltimore for "an expert" will contain some "hot shot." From rumors that have leaked out ahead of the report it is believed that the paper will place the blame of high prices for anthracite on the operators and absolve all except a few local dealers from "blame."

NEW YORK

Anthracite Receipts Increase, but Demand Continues Strong — Independent Quotations Are Easier — Demand for Steam Is Good — Bituminous Market Steady With Quotations Unchanged—Export Inquiry Is Slow.

Anthracite—There has been a slow but gradual increase in receipts. Demand remains strong but urgency of consumers has diminished somewhat and the excitement of a couple of weeks back does not now exist.

The mines are working steadily and production is running close to normal, in contrast with other industries. Operators are face to face with a demand which is country-wide and are endeavoring to make equal distribution.

Complaints of the shortage of coal is as strong in some of the cities and towns in the mine-fields as it is in New York and other parts of the country, with the result that local civic organizations have taken action to find out why consumers in these places cannot secure coal.

The Lake season has not yet come to a close because of the open winter and shipments to those ports will be continued until cold weather forces a stop.

Emergency coal, provided for relieving the local situation, is coming forward and is being distributed where most needed by the committee representing retail dealers.

Quotations for independent coals

have eased considerably but retailers continue to frown upon paying the higher prices. Quotations for coals of some independents range $11.60@$13, while the companies and larger independents adhere to their regular schedules.

Steam sizes are steady. Buckwheat and rice are in good shape while barley is long and at times hard to move. Buckwheat is being quoted at $4.75@$5.25; rice $3@3.25, and barley $1.50@$2. There has been no change in company quotations.

Bituminous—Lower temperatures and the holiday interference with production tended to temporarily stiffen quotations but not enough to make any appreciable difference in the situation. Demand continues easy while shipments have been slightly better.

Line demand for certain grades is strong and operators are having no difficulty in finding a market for these products. Many mines were closed the greater part of the week on account of the holiday.

Manufacturers are waiting for still lower prices before refilling their bins. Export business is quiet. Inquiries have fallen off and some difficulty is had in placing cargoes now on their way to foreign ports.

The easy situation in anthracite steam sizes is being reflected in the soft coal market and considerable mixing is being done.

Curtailment of industrial operations is having its effect upon market conditions and some shippers look for still lower prices. There have been many cancellations because of the business depression, while some operators are having shipments rejected.

Empty bottoms are plentiful and there are many loaded boats lying around. Pools 18, 34 and 44 are long, while Pools 9, 10, 71 and 1 are in good demand with boats held in waiting to take the coal upon arrival.

There is comparatively little coal at the upper ports with the exception of Arlington, while South Amboy is reported as holding the largest stocks of any of the lower ports.

Quotations f.o.b. piers in this harbor are based upon mine prices which range about as follows: Pool 9, $5.75 @$6; Pool 10, $5@$5.50; Pool 11, $4.50 @$4.75; Pool 18, $4@$4.25 and unclassified coals from $4.25 up.

PHILADELPHIA

Slightly Better Anthracite Receipts—Steam Coals Only Moderately Active—Wage Question Is Unsettled—Bituminous Trade Quiet — Prices Firm for Good Grades — Railroad Buying — Export Business Eases Off.

Anthracite—With the December business well under way, retail yards show no signs of accumulating anything like stocks of coal. Up to this time the weather has continued about normal, which means increased consumption. Dealers are doing their best to induce shippers to favor this market.

Dec. 1 has always been the turning point in the way of increased shipments, and at least one of the big companies is doing better in the way of deliveries. As evidence of this increased movement this company is now sending coal here at the rate of 100 cars daily and while this would not at first be noticeable, if kept up for two weeks would begin to show in the yards.

Most producers report the interruption due to Thanksgiving being less than usual, and outside of one day, production has gone on at the usual rate, and it was actually right after the holiday that coal began to come into the city. The P. & R. Ry. is making a strong effort to hold all their equipment on their lines, and due to this quite a little extra tonnage has been diverted to the local trade.

Consumer demand is still centered on the favorite sizes of stove and nut, and while this makes little difference to the dealers in the present condition of supplies, it does indicate that the average user is not so badly off as he pretends. The absence of pea is causing dealers as much trouble as the other sizes.

The steam trade is not as active, and while the companies are moving all their buckwheat without difficulty at $4.25, the independents have been compelled to shade their coal very much and are lucky if they can get 50c. above this figure. Rice and barley can generally be had near company circular.

Nothing definite has developed as to the agitation of the miners for an increase of 10 per cent to be added to the award of 17 per cent. The question has been again taken up by Secretary Wilson who will confer this week with both parties.

Bituminous — The market is unchanged and prices are ruling on spot coal similar to those in effect for more than two weeks. By some this is taken to mean that bottom has actually been reached. Each week shows a larger number of plants on reduced time and it was quite general for concerns to shut down for the balance of the week on account of Thanksgiving Day.

Export trade is nothing like what it was and this not only on account of embargoes which have been laid down by the railroads. With prices reaching a somewhat stable basis, indications are that the lowest figures have been reached for the present.

Recently Pool 9 has been offered at $6; Pool 10, $5.25@$5.50; Pool 11, $4.50 @$5, and Pool 18 at $4. The heaviest sales have been made of Pool 10, as most buyers seem to figure that a good grade is the best to have when they are using such small tonnage.

Due to limited buying many producers are feeling around to find favorable contract business. It is believed that many of them are taking on railroad fuel orders at prices much under spot. We have heard of Fairmont coals being sold around the $4 mark, with some Pennsylvania high volatiles 50c. higher.

The coke market is quiet, 72-hour at $10 and 48-hour, $9.

Lake

BUFFALO

Bituminous Now Going Below Contract Figures — Demand Still Falling Off — Cars Are Plentiful—Anthracite Supply Is Better.

Bituminous—As prices sag a new difficulty appears. They are now coming down to the level of the spring contracts. For sometime the prices have been but little above the higher contract figures and consumers have been able to get most of the coal they wanted, so that jobbers are doing very little business. At the same time, operators are beginning to find that they have need of the jobbers.

It is estimated that production exceeds consumption by about 20 per cent, which is enough to weaken any market pretty fast. The old failure to fill contracts is now changed to a failure to "find storage room" for contract coal when it comes in.

Contracting always adds to complications in times of fluctuation like this, for it too often happens that neither party will adhere to a contract unless it is convenient, though such delinquents are the ones who complain loudest when the other party fails to come up to the agreement.

The car supply is so good that there is not much said about it. The crops are moved without difficulty and if coal fails to reach destination promptly the cause is looked for somewhere else than in car shortage.

Quotations are not easily made, but in general prices range about $5.50@$6 for Pittsburgh and No. 8 lump, $5.25@$5.50 for mine run and $4.75 for all slack, with $5.25 for Allegheny Valley mine run, which is about all that is made.

Anthracite—Distributors state that the situation is improving and that the insistent demand will soon be over. It is added now that when people who declare they are out of fuel are offered coke or are told that small orders must be paid for in advance they mostly go away without buying.

The situation has been like a run on a bank. When it is found that there is coal to be had it is not wanted so urgently. Shortly the coal will cease to be shipped by Lake and then the city will have plenty. The one item that is not yet accounted for is the natural gas supply. The city authorities have joined in the claim that the gas company is trying to force the price up before it turns out a fair supply. The deadlock promises to continue.

Lake—Shipments for the week were 100,900 net tons, of which 58,000 tons cleared for Duluth and Superior, 21,000 for Chicago, 8,000 for Milwaukee, 7,300 for Fort William, 6,000 for Menominee and 600 for Pelee Id., Lake Erie. Freight rates are unchanged.

Coke—The market continues weak and declining on account of the state of bituminous. Jobbers get a few orders, which they are able to fill at $9 for 72-hour Connellsville foundry, $8@$8.50 for 48-hour furnace and $6.50 @$7 for off-grades and stock. Domestic sizes are much more active, being $7.50 for furnace sizes, $10.50 for small sizes and $2.50 for breeze.

MINNEAPOLIS

All-Rail Supply May Cut Dock Prices —Off-Grades in Poorer Demand—Domestic Consumers Await Lower Prices.

Unmistakable signs of ultimate lower prices are developing. As dock supplies are less than the probable needs, even with a restricted winter demand, the expectation is that prices will be sustained through the season. But on all-rail coal the situation is different. Already, the poorer grades from Illinois and Indiana are not commanding as good prices as formerly. There is more discrimination now. The choicer grades of southern Illinois coal are getting more attention. The less desirable are off as much as $1.50 a ton. Mines producing the better coals are now willing to contract for delivery after Jan. 1—something they have not considered for many months.

All this points to a distinct easing up of the market. It means lower prices at once on the cheaper grades, and a gradual easing of strength of the better coals. How long and how strong prices on the better coal will remain rests with the character of the winter and the consequent demand. If there should be a continued mild and open winter, with coal accumulating, it would not be long until prices would show concessions.

It is taken as a matter of course that toward spring there will surely be a slump in values, if it does not develop sooner. As the more Southern demand of the winter eases off, production will become larger than requirements, and lower prices are regarded as certain.

Just how the dock interests will emerge from the season in the spring remains a question. It would seem as though their limited stocks ought to be all absorbed before spring. Yet the possibilities of severe competition from the all-rail trade, extended into a further stretch of territory, may cut down the consumption of dock coal, for the high prices ruling on dock coal have already allowed a greater field in which the all-rail coal sells. Should all-rail prices ease off, so they can offer still sharper competition, it might compel a reduction in dock prices or sales.

The local situation at retail is much the same as it has been. There is a small but steady movement of all grades of coal, but consumers are not stocking up. They hope for something which will bring about a change to lower prices. There is no accumulation of orders, for coal has been moving to Twin Cities yards steadily, and all are well supplied for the present. Interior points are not so fortunate and a number of towns were caught last week without coal.

MILWAUKEE

Market Is Quiet, Despite Short Stocks and Approach of Winter—Dealers Well Up and Look for New Business—No Change in Prices.

The market is remarkably quiet, considering the conditions which confront the trade. The prevalence of mild weather may have contributed somewhat to this. Nobody seems to be particularly worried over the outlook for the winter in the face of known shortage of both hard and soft coal as compared with last year at the close of the season.

While coal men are sure they do not have all the coal required for the winter, they are equally sure that they have all they cared to purchase at the inflated mine prices. They prefer to do a hand-to-mouth business with rail coal during the winter.

Dealers report that the demand has slacked up considerably. They have caught up with their orders and are looking for new business. There is only a meager supply of hard coal and domestic bituminous, but steam is holding up well. As many industries are closing down temporarily or shortening hours, it is easy to meet all requirements. Prices continue firm and unchanged. November receipts by Lake thus far aggregate 81,355 tons of anthracite and 270,229 tons of soft coal.

More trouble looms for the coal man. Somebody is going to advise the Wisconsin and Minnesota Leglislatures that coal receivers on Lake Michigan and at the Head-of-the-Lakes market coal damaged by spontaneous combustion as first class fuel and will ask for restrictive legislation. Milwaukee dealers say they sell the partially burned coal for what it is worth. The coal investigation by the State Marketing Commission is still in progress.

CLEVELAND

Limited Car Supply Continues — Coal Demand Sinking Below Production — Receipts of Domestic Grades Grow — Steam Prices Shade Off.

Bituminous—With the ending of the formal Lake season Nov. 24 a situation has arisen which will shortly mean an excess of production. With industrial demand contracting steadily, it is freely predicted that operators soon are going to be confronted with difficulty in keeping miners fully employed.

There has been no drastic drop in the price at mines within the last week, largely because of the poor car supply. The coal trade now has only hopper-bottom cars, whereas all flat-bottom gondolas with sides under 38 inches were formerly reserved exclusively for coal shipments under the Interstate Commerce Commission's orders. Another reason for the railroad condition rests in some degree on the weeding-out process indulged in by the roads. In most cases where new men on operating crews are let out, it is with the intention of replacing them with old, experienced hands, who were lured away from the railroad service by high wages. With industrial plants closing and unemployment increasing, these men are said to be glad of the opportunity to get their old places back again.

Car supply in the No. 8 district varies. Some days it is at 100 per cent on some roads, while on others it has dropped as low as 34 per cent. The average rate of operations in the district is about 75 per cent. Only about 5 per cent of the coal consumed in this community goes into domestic consumption, the remainder being used by industrial plants. Therefore, the slump in business is beginning to be felt keenly by operators. At the present time prices for spot No. 8 steam at the mines range $4.50@$5.50. Slack is around $4.75. Lower prices are expected.

Pocahontas and Anthracite—Retailers say that receipts of Pocahontas and anthracite are beginning to improve. Supplies are still below the demand, although deliveries are not so far in arrears as they were a few months ago. Pocahontas lump is almost unobtainable and mine run is being substituted. Retailers point out that they are keeping their stocks down, with a view of taking advantage of concession in mine prices as they appear.

Lake—On Nov. 24 the ordinary insurance rates on Lake shipments ceased and higher rates went into effect for subsequent shipments. It is estimated that about ten days to two weeks will be required to close up the season.

Total shipments to the Northwest to Nov. 22 were 21,200,000 tons. Fully 800,000 tons remain to be loaded and shipped. Last year's shipments were 21,750,000 tons. It was estimated at the beginning of this season that 30,000,000 tons would be needed. A smaller amount sufficed last year because of large stocks left over from the preceding season. None remained from last season, but the contraction of industrial demand has been sharp and no shortage is expected to appear in the Northwest in the coming months.

Retail prices for coal delivered in Cleveland follow:

Anthracite—Egg, chestnut and stove, $15.10.

Pocahontas—Shoveled lump, $11.75; mine run, $11.10.

Domestic Bituminous—West Virginia splint, $11.75; No. 8 Pittsburgh, $9.65; Cannel lump, $15.

Steam Coal—No. 6 and No. 8 slack, $9.50; No. 6 and No. 8 mine run, $9.65; No. 8 3-in. lump, $9.65.

South

BIRMINGHAM

Buying by Railroads and Furnaces Stimulates Steam Market, Industrial Demand Being Weak—Domestic Continues Scarce — Production Reaches High Figure—Labor Is Becoming Plentiful—Prices Weaken Slightly.

Inquiry for coal from industrial sources the past week has been rather light, but considerable buying in the spot market by furnace interests and

some of the big rail lines enabled the trade to market the heavy output, which would otherwise have been moved with difficulty. Black Creek and Cahaba mine run was quoted $5@$6, Carbon Hill, $4.25@$4.50; Big Seam, $4@$4.25, per net ton mines.

The production of domestic coal cannot keep pace with current needs, to say nothing of stocking, and some steam is being bought for domestic use, and indications are that much mine run coal will have to be diverted to domestic channels through the balance of the year, or as soon as steady winter weather sets in.

There is a great influx of labor into the mine fields of the district, due to reduced operations or shutdowns at industrial plants and the curtailing of forces in other directions. The supply of common labor is hard to absorb. Many striking miners are now returning to work as fast as openings are provided for them, and conditions as regards production have been reversed from the status which has been maintained for many months past.

The amount of coal mined is now practically controlled by the demands of the market, except that this situation does not apply to domestic operations. Figures on output for the week ended Nov. 13 showed 291,000 tons mined, which is very near a normal weekly production. The car supply was fair at all operations.

LOUISVILLE

Demand Steadily Declining, Forcing Lower Prices—Operators Now Making Prepared Sizes—Retail Prices Not Affected Much as Yet—Gas Coal in Good Demand.

Demand for steam has declined materially, and operators are beginning to have some real trouble in selling. Small mines without sales organizations or screening facilities can hardly move cars at all. The larger operators are rapidly putting in their screens, and taking up the prepared size demand.

Right now there is a general scramble for contracts. However, the buyer who formerly bought under contract in many instances has been cured. Of course, there were many operators who filled their contracts religiously, but with the market rapidly declining and still lower prices anticipated, no big buyers are placing contracts.

There is not much export business and not much expected. Industrial plants are doing next to nothing, or not buying at any rate. Railroads are buying thirty days' supply in some cases. Southern cotton plants are at a standstill. It is merely a question of time before domestic consumers will be loaded down, unless severe weather is experienced.

The best demand is for gas and by-product, as such plants are still consuming in quantities, and have been behind on deliveries. Gas coal is quoted at a steady premium over steam.

Eastern Kentucky steam is offered as low as $4.25, the better grades of Harlan, Straight Creek, Hazard Gas, and Elkhorn bringing as high as $6. Screenings are quoted $5 a ton for good grades. Lump is $7@$10 with some selling as low as $6 to regular customers. With the market weak on mine run, it is even harder to sell screenings.

The Middlesboro district has received some 30-day business from the Southern Ry. for 4-in. and under, which will enable them to produce a good quantity of block.

Retailers report that while operators are beginning to screen more coal it is not reaching here yet. Retail quotations are:

	East Ky.	West Ky.
Mine run	$11.00	$10.00
Lump	11.50	10.50
Screenings	10.50	9.50

Mine quotations are:

Mine run	$4.25@$	6.00	$14.25
Screenings	4.25@	6.00	3.25
Lump	6.00@	10.00	5.50

Inland West

MIDWEST REVIEW

Market Is Very Quiet — Prices Fairly Firm—Operating Conditions Are Good —Indiana Trade Is in a Queer Predicament.

The steam market has been particularly dead and on account of the very unseasonable weather, demand for domestic has lessened. Sales of less-favored domestic coals have dropped off very considerably. It now appears that there is an abundance of coal in the Northwest, as cancellations are coming in in large quantities. These cancellations are caused by two facts. First, there is now a plentiful supply of Eastern coal on hand and Illinois mines have been able to ship very liberally on account of the improved car supply. Various farmers' elevator companies have been affected so seriously by the decline in the grain market that they are buying very sparingly. This situation also prevails in northern Iowa and southern Minnesota.

An announcement has been made that the Chicago, Milwaukee & St. Paul R.R. has practically closed a deal taking over the Chicago, Terre Haute and Southeastern R.R. The Milwaukee road will now have direct access to the very rich and extensive coal fields in Indiana tapped by the C. T. H. & S. E. This will be of very great value to the road, as it has never been able to reach any of the more important coal producing districts.

The coal situation in Indiana would be tragic if it were not so absurd. Under the benign power of the Indiana State Coal Commission it appears that dealers are unable to buy Indiana coal in sufficient quantities to keep them going, and as a result they have been forced to seek elsewhere for their fuel and have had to pay higher prices than they would have ordinarily paid for Indiana coal provided there were no state commission. The operators can hardly be blamed for this, as it is only human for them to want to get $4@$5 per ton outside of the state when they can only get around $3 inside.

There only remains two factors to be disappointed. First the householder, and second the manufacturer. It is expected that these classes will soon join with the retailers and operators and take steps to abolish the coal commission.

The car supply proved to be satisfactory enough this week, as an average will probably show that the mines received 75@80 per cent. Labor conditions continue satisfactory with practically no interruptions. Mine prices on the open market are:

Southern Illinois (Franklin, Saline and Williamson Counties)	
Prepared sizes	$5.25@$6.50
Mine run	4.50@ 5.25
Screenings	3.50@ 4.15
Central Illinois—(Springfield District)	
Prepared sizes	$4.75@$6.25
Mine run	3.25@ 4.00
Screenings	2.75@ 3.25
Northern Illinois	
Prepared sizes	$5.00@$6.00
Mine run	3.75@ 4.50
Screenings (washed)	4.00@ 4.50

Indiana Clinton and Linton fourth vein:

	State	Outside State
Prepared sizes	$3.45	$4.75@$6.00
Mine run	3.20	3.75@ 4.25
Screenings	3.00	3.00@ 3.50

Indiana, Knox County, fifth vein:

	State	Outside State
Prepared sizes	$3.25	$4.25@$6.00
Mine run	3.00	3.25@ 3.75
Screenings	2.80	2.75@ 3.25

CHICAGO

Steam Market Is Unchanged — Good Demand Anticipated Soon — Retailers Curtail Orders, Allowing Light Demand.

There has been but little change in the market during the week. Prices are all at low levels and it is not expected that operators and jobbers will make any further concessions. Steam coals are still around $2.75 for screenings and $3@$3.50 for mine run. Lump (1¼-in.) is bringing $4@$4.50 although there are scattered sales at figures higher than this.

Retailers have come into prominence by asking that their regular sources of supply hold shipments until further notice. However, the first cold snap will bring about a situation which will be better, so far as retailers are concerned.

There have been no large sales made nor have there been any large cancellations. The consensus of opinion points toward a decided betterment in the manufacturing situation to take place probably early in January. Wholesale prices have been decreased all along the line and it is expected that new and satisfactory prices will have to be evolved to meet the changing conditions.

It is very noticeable, however, that the entire coal trade is very optimistic and looks upon the present depression only as temporary. It is predicted that the demand will be entirely satisfactory soon after the first of the year, although it is not thought that the

prices will regain the altitudes reached during the latter part of September.

Receipts of Eastern coal increase weekly. Pocahontas is now in good supply. Anthracite is coming in large enough quantities to take care of current demand and it is predicted that there will be more than enough to go around for the balance of the season.

COLUMBUS

Receipts Growing With Curtailed Lake Shipments — Steam Continues Very Weak — Domestic Demand Still Strong — Operating Conditions Are Fair.

Following the formal closing of the Lakes season on Nov. 24, the Ore & Coal Exchange gave permission for loading Lake coal until further notice. A reduced tonnage is still moving to lower ports, following a heavy shipment the preceding week.

Domestic demand is still the outstanding feature of the Ohio trade. Retailers are now getting a larger tonnage. No marked scarcity exists in any section and it is believed that there will be a plentiful supply of lump within a short time. Retail prices are still rather high, although a marked decline from the high levels of the fall is recorded. Hocking lump now sells $8.25 @$9 while mine run can be purchased $8.25@$8.50. West Virginia splints and Kentucky grades are $9.50@$10.50 but the price is declining. Pocahontas is scarce and rules fairly high.

With the closing down of many industrial concerns consumption of steam has fallen off to a large extent. Plants which are still operating have accumulated a surplus stock and are not in the market. Railroads are taking a fair tonnage, but the freight movement has declined in many ways. Taking it all in all, weakness characterizes the steam trade and lower prices are in store.

Production in Ohio fields is holding up fairly well despite adverse circumstances. The holidays, which have been rather numerous recently, have cut into the output. The Hocking Valley field has had a run of about 60 per cent and Pomeroy Bend, Cambridge and Crooksville report about the same.

Prices of principal coals used in central Ohio at the mines are:

Hocking lump	$5.00@$6.50
Hocking mine run	4.25@ 5.25
Hocking screenings	3 75@ 4.50
Pomeroy lump	5.00@ 6.50
Pomeroy mine run	4.50@ 5.50
Pomeroy screenings	4.00@ 5.00
West Virginia splints, lump	5.50@ 6.50
W. Va. splints, mine run	4.50@ 5.50
W. Va. splints, screenings	4.00@ 5.00
Pocahontas lump	6.50@ 7.00
Pocahontas mine run	5.50@ 6.50
Kentucky lump	5.50@ 6.50

DETROIT

Steam Trade Continues Sluggish — Moderate Weather Eases Domestic Demand — Receipts Improve — Prices Are Steady.

Bituminous—Buying is being conducted on a smaller scale than recently. Interest in steam business is only of moderate proportions, while in the domestic market, inquiry has become less pressing with the return of more moderate temperatures.

Steam consumers are influenced by general business conditions in industrial and manufacturing lines and are taking only sufficient coal to provide for immediate requirements. With mills and factories generally operating only on part time, the consumption of coal is very largely curtailed.

Buyers are unwilling to increase reserves and show a disposition to hold back in the belief that they will be in position to benefit from any reductions that may be made. Domestic demand is easier though buyers are still taking a considerable amount of prepared coal. Coal receipts are improving gradually, both in quantity and quality, as Lake shipments dwindle.

Hocking domestic lump is quoted $7.50@$7.75 at the mines, mine run is $5.25 and slack may be had at $4.75. West Virginia lump is $8.65@$8.85, with mine run at $5.85 and slack around $5.50.

Anthracite—There is still a deficiency in the supply of prepared sizes. Retailers have been unable to accumulate stocks while receipts continue light and irregular. Many householders have found it necessary to substitute bituminous or coke.

CINCINNATI

River Coal Strengthens Supply—Some Shortage in Neighboring Districts—Operating Conditions Are Better.

Recent heavy rains in the Ohio River Valley, which caused a considerable rise in the stage of the river, have greatly facilitated the movement of river coal, relieving the strong demand prevailing in the Cincinnati district.

With ever-improving conditions in the car situation, dealers feel confident that sufficient coal for all uses will be had during the winter.

The trade is not so optimistic as to the future supply of coal for dealers outside the Cincinnati area. Several dealers state that in many points outside of the district great difficulty is being experienced now in getting shipments of coal.

Demand for all grades continues strong. While sufficient soft coal for domestic and steam consumers can be had, anthracite coal continues a scarcity.

The car situation, which has been the great problem of the operators, while somewhat improved, still is far from normal. Many of the mines are working but two or three days a week, owing to this shortage. It is the belief of the operators, however, that with the improving conditions in the situation, sufficient supply of cars will be had at the mines soon.

Prices of coal in the retail market in Cincinnati remain practically unchanged from last week. A slight rise in the price of domestic egg coke is the only noticeable change.

Retail prices to Cincinnati consumers were quoted as follows:

Bituminous lump	$9.25@$10 50
Nut and slack	8.50
Mine run	8.75@ 9.25
Smokeless lump	11.25@ 11.50
Mine run	10.00@ 10.50
Anthracite chestnut and egg	15.00@ 16.25
Coke, domestic egg	16.00

ST. LOUIS

Market Is Easier on Account of Milder Weather—Car Supply Good and Working Time Is Better—Business Depression Felt in Steam Sizes.

The local condition is extremely easy and has caused certain anxiety among shippers as to what will happen if the winter continues open and mild. Steam demand is unusually quiet with the result that the market is somewhat heavy. In the country there is not the steam demand that there should be. The general business depression is gradually working its way to the Middle West.

The tonnage shipped to Chicago is unusually light. Railroads have been acquiring a good tonnage recently, but surplus shipments are being shut off by some roads. Domestic demand in the country continues fairly good, but in St. Louis proper is almost at a standstill.

Mines in the Standard field are working better than three days a week. Car supply is unusually good, with no labor troubles to speak of. Prices range $3@ $3.50 for screenings, mine run $3.50@ $4, with lump $4@$5.50. The higher prices indicate country shipments. Mt. Olive coal shows $4@$5 for domestic sizes, with steam going mostly on contract.

In the Carterville district the car supply has been unusually good, with about four days a week on commercial coal. Railroad tonnage continues heavy, Prices range $3.25@$4.50 on screenings, mine run $3.75@$4.50, and domestic $4 @$5.50 by the regular operators, and as high as $6 by independents.

A little anthracite is moving to St. Louis, but the tonnage is insignificant. A good tonnage of Alabama coke is moving through the St. Louis gateway for points North and West.

Canada

TORONTO

Supply of Hard Coal Still Short—Bituminous Plentiful With Limited Demand and Prices Easier.

Conditions as regards the supply of anthracite have been practically unchanged for some time, the limited quantities received being still inadequate to the demand. Dealers are yet considerably behind with deliveries and there is little if any coal in the yards. Bituminous has been coming forward much more freely with a steady falling off in the demand, due to slackening of industrial activity, and the close of the threshing season. The supply on hand is ample for present requirements and prices are easier.

Quotations per short ton are about as follows:

Retail	
Anthracite, egg, stove, nut and grate	$16.90
Pea	15.40
Bituminous steam	15.00@$16.00
Domestic lump	17.00
Wholesale f.o.b. at destination	
Three-quarter lump	11.00
Slack	10 65

News From the Coal Fields

Northern Appalachian

PITTSBURGH

New Car Shortage Continues — Some Belated Lake Buying — Industrial Consumption Continues To Decrease — Prices Recede a Trifle.

The fresh car shortage that began to develop Nov. 12, has not abated. On some divisions there are very fair car supplies but on others the supplies run down to low percentages. In the past week the spot market has yielded in price only a trifle, in general holding the recent advance brought about by this new car shortage.

Belated efforts to rush coal to the Northwest has had a stiffening effect on the spot market, deferring further decline that is generally regarded as inevitable.

There is additional news of reduced consumption in manufacturing, as independent steel mill operations are decreasing rapidly. In several instances mills have closed entirely, probably for the purpose of accumulating specifications so as to be able to run at a fair rate for two or three weeks upon resumption. Domestic demand continues heavy, but dealers are gradually catching up with their orders. Thus far the supply of natural gas has proved better than was predicted, and some of the domestic stocks laid in last summer are likely to last longer than expected.

The spot market is quotable at $4.75 @$5 for steam and $5.50@$5.75 for best grades of ¾-in. gas. However, one of the large companies prices remains at $3.75 for mine run and $4 for screened. Connellsville coal has sold down to $4.50 or less.

CONNELLSVILLE

Spot Furnace Coke Is Maintained — Deadlock on First-Half Contracts — Operators Curtailing Production To Meet Situation.

The spot furnace coke market has been maintained during the week, by operators blowing out ovens and adjusting production to the greatly reduced demand. Even contract shipments have been curtailed or suspended. Foundry coke has declined about 50c. in the week.

Furnacemen have made up their minds that they will not contract for coke for the first half of 1921 except at much less than the present spot market, and are willing to give coke operators such time as is necessary to yield in their price views.

It is uncertain whether contract business will be done chiefly at flat prices or on a ratio basis. Recently operators were discussing ratios of 4 to 1 and 4½ to 1, but furnacemen do not seem willing to contract even at 5 to 1. On a flat price basis, furnaces would hardly bid as much as $6, while no coke operator is willing at present to get down even to $6, so that buyers and sellers are far apart. There is no interest in foundry coke contracts, and some contracts made a couple months ago at $15 will probably have to be revised.

The spot market is quotable $8@$8.50 for furnace and $9.50@$10 for foundry. The *Courier* reports production in the week ended Nov. 20 at 200,360 tons, a decrease of 1,450 tons.

FAIRMONT AND PANHANDLE

Production Declines With Poor Car Supply—Prices Are Firm—Export Call Is Weaker—Domestic Sizes in Good Demand, but Steam Market Is Listless.

FAIRMONT

Transportation conditions in the Fairmont region were worse than they had been for some time, in the period ended Nov. 20, not only because of an accumulation of loads along the line of the Baltimore & Ohio but also because of the fact that anthracite regions were apparently being given the lion's share of the supply for movement East. As a result idleness was most pronounced from the very outset of the period.

The Interstate Commerce Commission has put a stop to the wholesale appropriation of coal by the Baltimore & Ohio. Following the end of the confiscation it was said that the road was endeavoring to make arrangements through the usual channels for fuel supply at $4.25@$4.50.

Prices fluctuated during the week between $4.50@$4.75. The price on spot coal for Tidewater was about $5 a ton, but shipments were more or less limited, particularly during the early part of the work, permits being hard to secure. As the Lake season drew to a close a somewhat larger volume was being rushed to Lake points, the price being about $4.75. The spot market was rather listless. However, there was no over-production, the car supply making it rather difficult to take care of contracts.

NORTHERN PANHANDLE

The car supply was far from satisfactory, loss in production from such a source reaching about 25 per cent. Unfavorable weather and an accumulation of loads at various points contributed to the loss. The poor car supply interfered somewhat with the movement of coal for domestic trade and cut down Lake shipments, the latter, however, practically ceased on Nov. 20.

Prices were somewhat firmer for domestic as a result of the cold wave. There was an ample supply of fuel for domestic trade, owing to the general dullness of the spot steam market.

The range of prices on mine run was $4.50@$4.75, with prepared sizes running somewhat higher. It was difficult to find an accurate figure on export prices, owing to the fact that there was little or no call, but as nearly as can be estimated the price was about $5.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

Total bituminous, including coal coked

	1920		1919a	
	Week	Calendar Year to Date	Week	Calendar Year to Date
Nov. 6b	11,429,000	464,393,000	3,582,000	405,344,000
Daily averagec	2,078,000	1,763,000	597,000	1,536,000
Nov. 13b	12,141,000	476,534,000	4,024,000	409,368,000
Daily averaged	2,130,000	1,771,000	671,000	1,517,000
Nov. 20e	11,770,000	488,304,000	5,344,000	414,712,000
Daily average	1,962,000	1,775,000	891,000	1,503,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Counting election day, November 2, 1920, as 0.5 of a working day. (d) Subject to revision. (e) Counting Armistice Day, November 11 1920, as 0.7 of a working day.

ANTHRACITE

	1920		1919	
	Week	Coal Year to Date	Week	Coal Year to Date
November 6	1,415,000	52,120,000	2,008,000	55,750,000
November 13	1,753,000	53,873,000	1,880,000	57,610,000
November 20	1,975,000	55,848,000	2,055,000	59,665,000

(a) Less 2 days' production during first week of April to equalize number of working days covered for the two years.

BEEHIVE COKE

United States Total

Week Ended Nov. 20c 1920	Week Ended Nov. 13b 1920	Week Ended Nov. 22 1919	1920 to Date	1919a to Date
365,000	380,000	402,000	18,819,000	17,376,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

CENTRAL PENNSYLVANIA

Car Supply Is Satisfactory — Prices Are Firm — Labor Becoming Plentiful.

Car supply throughout the field during the past week, with but few exceptions in the western part, has continued on a satisfactory basis. Production continues at about the same rate as has been maintained during the fall and the slowing down of industry has not been reflected by any slump in coal shipments.

Prices remain around the $5 mark. Dealers in Altoona are experiencing no difficulty in furnishing coal for their customers at $8@$8.50. Dealers with sidings and tipples are asking $6.25.

Except at Morrisdale, in Clearfield County, where a strike has been in progress for several weeks, the field is free from labor trouble, and many operators have increased their forces to some extent. Many men laid off at the various industries in the district are falling back to the mines for employment.

The committee appointed some time ago has about completed the preparation of rules and regulations suggested for the elimination of unfair practices in the field. The rules were drawn by a subcommittee and have been submitted to the general committee for action.

Middle Appalachian

HIGH-VOLATILE FIELDS

Production Declines With Poor Car Supply and Inadequate Motive Power —Thacker Strike Situation Again Serious — Steam Market Is Listless, but Prices Are Unchanged — Domestic in Good Demand—Export Embargo Holds.

KANAWHA

Car service in the week ended Nov. 20 was the worst afforded Kanawha mines in many a week. Before the end of that period the supply had slumped to below 40 per cent. While bad weather undoubtedly played a part, other factors operated to restrict the supply of cars, Western connections failing to furnish their share of equipment. With Tide and Eastern points largely embargoed and with more cars moving in the anthracite trade, the number of empties returned to the Kanawha field was greatly reduced, and the average daily production was cut below 20,000 tons a day.

There was little activity in the open market. The steam price prevailing on a general average was $4.50@$4.75. Demand for domestic lump picked up slightly, mainly as a result of the cold weather, and ranged $5.50@$6. There was no life to the foreign market, nor would it have been possible to meet that demand, owing to the Chesapeake & Ohio embargo, except in the larger cars. Even Lake shipments were reduced to a minimum.

In view of the small production for which the shortage of cars was responsible, producers were hardly able to care for contract obligations. Mines on the Kanawha & Michigan also were affected, not having over 30 per cent run of cars during the greater part of the week.

NORTHEAST KENTUCKY

Less coal was produced in the third week of November than during any period of the month, the sum total amounting to only 44 per cent of potential capacity. The greatest loss was due to car shortage, being placed at 50 per cent.

This was largely the result of a breakdown in motive power of the Chesapeake & Ohio and also to unfavorable weather conditions.

Domestic demand was much stimulated, owing to the arrival of winter weather. With the increased demand it became apparent that producers were not prepared to meet such an emergency because of lack of screening facilities. Since prepared sizes are hard to find, domestic consumers have become more reconciled to mine-run.

The market for steam and gas was still much off-color and the general run of prices was not more than $4.50@$4.75, with prepared sizes averaging between 50c. and $1 more.

There were, at one time during the week, in the yards at Russell, sixty-odd engines out of commission, repairs having been impossible owing to a recent strike among the boiler makers.

LOGAN AND THACKER

Production decreased in the Logan field during the week ended Nov. 20. the output showing a decline of 10,000 tons as compared with the previous week. Inadequate motive power was said to be principally responsible. In fact, the Chesapeake & Ohio was unable to accept empties from foreign lines for placement on its system.

While a small tonnage was shipped to Lake during the early part of the week, it decreased in volume as the week neared its end. Discrimination in continuation of the embargo against the movement to Eastern markets and Tidewater was charged by Logan producers. No coal was shipped from the Logan region to the East except a few 70-ton cars. Consequently, most of the tonnage was being consigned to Inland West markets.

There was a slight revival of interest in splint coal on the part of manufacturing plants, but the principal increase in demand was for prepared sizes, which averaged about $5.50, with mine run from 50c. to a dollar a ton less. Prices fluctuated a good deal during the week. Export was around $6.50 a ton but little was moving at that figure.

Production was not on quite so large a scale in the Williamson field, owing to a curtailed car supply, but aside from this, even in the area directly affected by the strike, production was running about 80 per cent of potential capacity. Taking the field as a whole, however, the tonnage loss was still overshadowing the total amount of coal produced.

While plans were under way to restore order and prevent further attacks and dynamiting, yet the situation was serious and it was considered highly probable that it would be necessary to bring the Federal troops back to Mingo County. Strikers seem to have become obsessed with the fact that they are immune from punishment for whatever crimes they may commit.

The range of prices was about the same as in the Logan field, with virtually the entire output moving to Western markets. There was little demand for free coal, however, most of the output being applied on contracts.

VIRGINIA

The car supply was not so satisfactory as it had been during the previous week. The weather militated against the movement of equipment. Then, too, not so many flat-bottom gondolas are now available for use in the transportation of coal. Less coal was being used in coke-making than usual, being needed to take care of demand in certain quarters.

It is the wagon mines and those holding few contracts which are principally affected by the present market slump. As the demand diminishes more small mines are being closed down.

For lump coal only was there any marked demand and domestic was going at about $5. Run of mine in the open market was bringing $4.50, but there was comparatively little spot demand. The demand for export had melted away to a large extent. Contracts, however, still remain to be met, so that there is little or no idleness around any mines, except those already referred to, as a result of market stagnation.

LOW-VOLATILE FIELDS

Poor Car Supply Curtails Production— Transportation Conditions Also Poor— Spot Steam Market Very Dull—Prices Remain Firm for Domestic — Export Demand Is at a Standstill.

NEW RIVER AND THE GULF

There was not more than a 4 per cent production in the New River field in the week ended Nov. 20, the reduced output being due entirely to transportation disabilities preventing mines from receiving anything like an adequate car supply. From Tuesday on, the placement was down to about 30 per cent. Connections had plenty of empties for the C. & O., especially in the East, which the road was unable to handle, not only because of weather conditions but because of lack of motive power and engine failures.

While there was only a feeble demand for New River smokeless, nevertheless there was no loss in production growing out of market conditions, since mines were hardly able to keep up contract shipments. Export demand was at a standstill and while there was some Western business for prepared sizes the

prospects were for a diminution of demand.

Not many spot orders were placed; the steam price being $5@$6 and prepared sizes 50c. to a dollar higher, with export at $8.50 and falling.

Even the Virginia Ry. was unable to maintain its car supply at previous figures. During the week ended Nov. 20, the supply amounted to about 60 per cent of mine rating. The C. & O. Gulf mines worked little more than a third of the week.

Market conditions were much the same as in the New River field, mine run ranging $5@$6 dollars and with few inquiries even at that price. Both Inland and export markets were affected by the withdrawal of buyers.

Pocahontas and Tug River

In both the Pocahontas and Tug River regions during the period ended Nov. 20 there was a shortage of equipment and a poor distribution of empties owing to unfavorable weather conditions. In neither field was there any coal being sold in the open market to amount to anything.

At least a third of the normal production in the Pocahontas field represented the loss in that region owing to severe sleet storms cutting off the current from the Appalachian Power Co.'s plant, many mines in consequence finding it necessary to shut down. Engine failures combined with icy tracks made it impossible to distribute cars promptly or to move loads.

No spot business to speak of was being transacted and where buyers were placing orders they were picking their coal. There was no demand for export and the same was true to Inland markets. As nearly as could be ascertained, export would range about $7.50, steam $5@$5.50 and prepared sizes 75c.@$1 more. Large orders from retailers were being filled and the mines were about up to requirements on that business. Old export orders were being rapidly filled.

Only 70,000 tons were loaded in the Tug River field, that being the smallest production since June. Car shortage was entirely responsible for the reduced output, though more cars could have been loaded on Saturday had miners worked in a reasonable way. As an example of conditions in the field, there were some miners who would not go into the mines at all on Saturday while those who had been at work came out at noon, indicating the spirit of indifference manifested by labor.

Middle Western

INDIANA

Outside Domestic Market Is Weakening and Local Receipts Will Benefit—Indiana Commission Is Enjoined from Interfering with Contract Shipments.

Contraction of industrial operations continues. Coupled with the better production made possible by an improved car supply, this has softened the steam market to such an extent that producers are appearing in the selling field for the first time in many months.

Outside the state, domestic coal is not feeling the break to such an extent. However, Chicago and Northwest markets are beginning to weaken under the heavy receipts, and more of this Eastern and Illinois coal is now moving to Indiana. The first of the year will probably see a price reduction.

The car supply may be slightly reduced by removal of the restriction on open-top equipment for exclusive coal loading. With declining demands, however, the supply is expected to be entirely adequate.

As the shortage of domestic coal outside the state is being rapidly filled, it is expected that outside operators will divert more coal here, at prices in line with those forced upon Indiana producers. In this way, it is hoped that Indiana's domestic shortage may be quickly met.

The Food & Fuel Commission has just been enjoined from issuing any orders allocating coal to Indiana consumers which was contracted for interstate delivery before the creation of the commission.

DUQUOIN

Prices Slightly Lower — Northwestern Trade Bolsters the Market — Car Supply Holds Out Well.

Conditions have not changed to any great extent over last week, with a possible small exception of a slump in some grades of coal. Mines have worked 70 to 90 per cent, the car supply holding out well for the season of the year. The Chicago, Burlington & Quincy R.R. did not hold out as well as other carriers during the week.

The demand, while falling off in some regions, is still steady and the Northwestern trade is uneasy as to whether their wants will be supplied. This demand is all practically in the southern Illinois field and is one of the main features which is keeping up the market at this time.

The continued steady operation of the mines has a tendency to lower the prices and the warm weather is also blamed. Prices during the week did not take any decided drop, but the general depression could be felt throughout. Screenings ranged $3.50@$3.75; lump, $4; mine run, $3.75@$4.

WESTERN KENTUCKY

Prices Soften — Domestic Calls Are Brisk — Steam Is Inactive — New Freight Rates Are Sought.

The situation is better than could be expected, considering the slump in other fields. Mild weather has resulted in comparatively small domestic call, and industrial consumption is being steadily lowered.

With a car supply up to around 60 per cent and a good supply of labor, mines are getting out a good tonnage. The Southern retail demand for lump has been good, but steam is rapidly falling off.

It is reported that operators are selling lump at around $5.50 average; mine-run, $4.25; and screenings, $3.25, although it is doubtful whether much lump coal is selling under $6.

Operators are further endeavoring to develop the selling field, having just filed a complaint with the Interstate Commerce Commission, asking for a rate of 10c. a ton over the rate from the Harlan mines, to Atlanta and Georgia points north of the Central of Georgia Ry., extending on a line from Atlanta to Savannah. Export rates have also been asked through Savannah and Port Wentworth, Ga., at 60c. under the rates proposed to those points proper.

Southwestern

KANSAS CITY

Operating Conditions Are Good—Market Is Steady and Steam Production Adequate — Some Domestic Shortage Noted.

Mines in the Southwest are having good running time. The car supply is adequate with few exceptions, and there is no railroad congestion or interruption. The temperature is above normal for the season, and demand just about equals the supply, with the possible exception of shortage in spots of Kansas domestic grades.

Prices are steady and quotations made by shippers are as follows:

Arkansas smokeless domestic grades, $6.75@$8; steam, $4@$5.25.

Kansas domestic grades, $6@$6.50; steam, $4.50@$4.75.

Missouri domestic grades, $6@$8; steam, $3.55@$5.50.

Mines, generally, were idle Thanksgiving Day, but all steam plants are endeavoring to carry from one to two months' supply of coal to tide over such incidental interruptions.

Western

UTAH

Car Situation Improves — Labor Is Nearly Adequate — Rate Decision Is Expected Soon.

The car situation continues to improve, but is still subnormal. Retailers, however, are fairly well stocked. The demands made upon them this season so far have not been heavy, owing to the mild, almost summerlike weather which has prevailed. Labor is good, although most of the mines could use a few more experienced men.

The dispute between the Utah Public Utilities Commission and the Interstate Commerce Commission, regarding the proposed increase in Utah freight rates is not yet settled. The decision is anticipated early in January but may come before the end of the present year.

MINE And COMPANY NEWS

ALABAMA

The Weller Coal Co., Aubrey, recently organized with a capital of $10,000, has acquired about 150 acres of coal lands and is planning for its development at an early date. It is proposed to establish a daily output of 200 tons. Tom Stobert is secretary-treasurer.

COLORADO

Coal production is back to normal, following the walkout of 1,500 miners in the lignite fields to force operators to grant a 20 per cent increase for deadwork and incidentally bring about union recognition through an agreement extending over two years. Hearing before the State Industrial Commission resulted in a continuance until Nov. 29. Operators will testify at the adjourned meeting. They say there is at present no wage scale covering deadwork in the mines. James Dalrymple, state coal mine inspector, told the commission that deadwork is such labor as falls to others than coal diggers. Increased production comes in spite of the loss of the last four days in October on account of strike conditions. The total production in all fields in Colorado for the period between Jan. 1 and Oct. 31 was 10,127,997 tons, as against 8,649,062 tons for a similar period last year. Production during October was 1,090,867 tons against 917,021 for September. In Boulder County, where the strike interrupted output, the October record nevertheless shows a production of 112,135 tons against 103,249 tons in September. In Weld County production was 109,743 tons compared with 109,199 in September.

ILLINOIS

The Boehmer Coal Co., of St. Louis, is now installing a new 200 k.w. motor-generator set at one of its mines near Collinsville, St. Clair County. The company recently purchased the property of the old No. 5 mine near Duquoin, Perry County, and is now re-equipping the plant. All of the machinery, including shaker-screens, hoisting engines, cages, etc., were dismantled some few years ago when the mine was closed down by the Jupiter Coal Co., which operated it at that time.

Over 300 men were thrown out of work recently when the fan house of the Jefferson mine operated at Springfield, by the **Sangamon County Coal Co.,** burned to the ground. The quick action of the company cut short the time of idleness for the men and the fan house was soon rebuilt.

The mine at Hallidayboro, operated by the **Jackson Coal Co.,** is again working after being idle for sometime due to a fire in the workings of the mine. Rescue teams from Duquoin and Benton were called and the fire was extinguished. The mine recently experienced a fire on top which took everything with exception of the engine and generator rooms. The mine is one of the oldest in the state.

INDIANA

The C. R. Cummins Construction Co., of Cleveland and St. Louis, is surveying a switch line from the Southern Ry. at Indianapolis to a point seven miles southeast of Oakland City, where a strip mine will be opened in the spring. The company has many thousand acres of strip coal land and will place five steam shovels at the work, making it the largest strip mine in Indiana. It is estimated that sixty days will be required for the building of the switch. The steam shovels are under construction and will be placed on the work as soon as the railroad is completed.

The John Bull mines of Boonville, employing about 200 coal miners, and operated by **Cypress Creek Coal Co.,** will close down for two weeks for repairs. All the other coal mines in that region are working at full speed, though the market for coal has fallen to a low price in the last 30 days.

KENTUCKY

The Stearns Coal & Lumber Co., operating at Stearns, Ky., where it has 100,000 acres of coal and timber land, bought years ago, is installing 27 miles of additional railroad, ten miles being completed, and is getting ready to open up a considerable territory for development and marketing.

The King Blue Gem Co. of Manchester, has filed notice of an increase of capital stock to $10,000.

MISSOURI

Attorney-General McAllister has filed a motion in the Superior Court dismissing an inquiry he instituted early last August against the **Southern Interstate Coal Operators' Association** on the theory that the organization was guilty of an unlawful combination in restraint of trade. The information was directed against the association and eight of the large coal companies in Kansas City and western Missouri. In his motion to dismiss the Attorney General says that a full investigation of the books and papers of the organization and the examination of many witnesses convinced him that neither the organization nor the companies belonging to it have violated the anti-trust or the anti-pooling laws.

OKLAHOMA

The company recently organized by **J. W. Hinton** and associates with a capital of $50,000, has had plans prepared for the development of coal property at Gaither. Installation of mining equipment is being arranged.

Extensive coal developments at Gunther will be undertaken by the **Gunther City Coke & Mining Co.,** recently organized with a capital of $1,000,000. The incorporators are C. B. Cordes, E. Webb and W. H. Brown, Des Moines, Iowa.

The Boley Ice and Fuel Co. of Tulsa, retail coal dealers, filed an amendment to the charter at Oklahoma City increasing the capital stock from $12,000 to $25,000.

OHIO

Charles S. Geese, who has been operating a mine near Shawnee under the name of the **Carrington Coal Co.,** and who also operated three mines in the same vicinity under the name of the **Pine Hollow Coal Co.,** has turned over the holdings to a new corporation styled the **Carrington Coal Co., Inc.,** with Charles McMillan as president and general manager. It is planned to enlarge the output of the mines.

The Philadelphia & Cleveland Coal Co., of Cleveland and Columbus, has sold its new mine, a mile from Pomeroy, to the Stalter & Essex Coal Co., of Columbus.

The Camp Bros. Co. has been incorporated with a capital of $500,000 to operate coal and limestone properties, located on the Magodore road in Springfield township, Summit County. The holdings of the company are extensive. Incorporators are H. H. Camp, L. W. Camp, C. C. Baird, Thomas F. Walsh and Richard E. Augustine.

The Eastern Hocking Coal Co., a syndicate of Columbus and Zanesville capitalists, who purchased a tract of 17,000 acres of coal lands in Morgan, Perry and Muskingum counties about a year ago from the National Coal Co., has taken no steps for developing the property so far. According to the announcement of its president, J. H. Frantz, manager of the Columbus branch of the American Rolling Mills Co., the deal was made as a long time investment. The property embraces 202 farms and covers approximately 29 square miles of territory. Other officers are: Cary T. Marshall, Zanesville, vice president; H. M. Runkle, Columbus, secretary and treasurer.

PENNSYLVANIA

Fire that has been raging in the Katharine mine of the **Union Connellsville Coal & Coke Co.** at Simpson, near Brownsville, is under control and will soon be extinguished. Damage may easily reach $1,000,000, the officials state. Spontaneous combustion is now regarded as the cause of the fire which invaded every part of the workings. The 200 workmen escaped safely from the mine. The fire has thrown idle the 142 push ovens of the company, which is a Uniontown organization.

Coal mining at Curwensville, Clearfield County, has taken on new life and new mines have been opened near Bloomington by the **Lantz Coal Co.** The coal is being mined and dumped on coal cars on the New York Central at the Pyramid tipple. The new company will load from 25 to 30 tons a day until the drift is completed when the output will be increased.

Dr. C. E. Chase of Clearfield, representing Clearfield business men has closed a deal at Houtzdale for some valuable coal property. This property contains 300 acres underlaid with several veins, one of which is being operated at the present time. The new company is composed of Dr. C. E. Chase, Dr. A. D. Cowdrick, Wade Stewart, M. F. Bratton and Edward B. Chase. Several additional openings will be made.

TENNESSEE

The Durham Coal & Iron Co., Chattanooga, has recently acquired coal property in the vicinity of Bakewell, and is planning for the erection of a new steel coal tipple and the establishment of a housing development on that site, estimated to cost about $150,000. The installation of machinery for mining purposes will be inaugurated at an early date.

The Mecer Coal Co., Memphis, has filed notice of an increase in capitalization from $30,000 to $150,000.

TEXAS

The Awbrey Coal and Coke Co. of El Paso, has been organized and charter filed with the Secretary of State. The company is capitalized at $10,000, and the incorporators are: C. B. Woodal, J. R. Woodal and A. W. Danford. The company will conduct a retail coal and coke business in El Paso.

Deposits of good quality lignite in strata from six to seven feet in thickness have been found at a depth of 36 to 40 feet near Weldon. Several companies are now being organized and mining operations will soon begin on an extensive scale. The lignite is shown by experiments to make excellent steam fuel, and a market for it is promised from nearby industries.

The Calvin Coal Co., San Antonio, has filed notice of an increase in capital from $60,000 to $240,000.

VIRGINIA

Preparation for operations at the Midlothian mines, in Chesterfield County, lately acquired by the **Murphy Coal Corporation,** are well under way, and it is known that soon the place will be humming with activity. Within the last month, since the property was acquired, the Southern Ry. has completed its track to the mines and is ready to begin handling the output.

WASHINGTON

Articles of incorporation will soon be filed by the **Columbia Collier Co.,** which recently began opening a coal mine in Section 32, on Lincoln Creek. The new concern will be capitalized for $100,000.

Sam Hyde of Seattle, one of the state's well-known coal operators for 35 years, who recently disposed of his mine near Seattle for $500,000, will be president and manager of the new company. As soon as the mine is in full operation he will reside in Centralia.

WEST VIRGINIA

The Island Creek Coal Co., which owns 28,000 acres of coal land in the Logan district, 8,000 of which are under development, is building 50 new houses for its miners in

the Mud Fork region, about a mile and a half northeast from Holden. It is expected that these houses will be finished by March 1, 1921. This company opened a few months ago its Mine No. 14 which on its opening day dumped 30 cars (1,500 tons) of coal. It is the first time in the history of the Logan field that such a feat has been achieved.

The Carlston Mining & Power Co. of Kingwood, organized with a capital of $125,000, is having plans prepared for the development of 800 acres of coal property recently acquired. Mining equipment for all features of operation will be installed and a daily output of 800 tons is expected. It is reported that plans are being considered for the erection of an electric power plant for works service.

The Gay Coal & Coke Co. of Mt. Gay, had its workmen's compensation insurance rate reduced to 85c. This is believed to be the lowest insurance rate in the whole state of West Virginia. The company, which is a pioneer in the Logan field, in its 15 years' existence produced over 2,000,000 tons of coal without a single fatal or even serious accident. H. S. Gay, Jr., is the superintendent in charge.

The Glasscock Collieries Co., Morgantown, has purchased about 500 acres of Sewickley coal near Cassville in Cass and Grant districts of Monongalia County and will commence work on the sinking of a shaft. Former Governor William E. Glasscock of Morgantown was one of the organizers of the company. So far the company has not had a meeting of stockholders to complete its organization.

A syndicate of business men of New York and Japan has purchased a large acreage of coal land near Moundsville, where a large byproduct plant will be established. In addition to New York and Japanese business men a number of chemical experts of this country are said to be interested in the new concern which is headed by **D. W. C. Tehanlre of New York City.**

Further impetus will be given to the development of the coal resources of Monongalia County on the west side of the Monongahela River by the sale of 950 acres of Pittsburgh coal by the New England Fuel & Transportation Co to the **Osage Coal Co.** and the **Abrams Creek Coal Co.,** in all of which S. D. Brady and others are interested. While the purchase price was not announced it is understood to have been $600,000. The tract acquired is near Beechwood station in Monongalia County and constituted Block No. 5 of the New England Fuel & Transportation Co. holdings. The coal was originally a part of what was known as the Empire tract belonging to the Elkins estate.

The Williamson Operators' Association has compiled figures covering production and the return of men to work since the beginning of the strike in the Williamson field of West Virginia. The July production at the mines directly affected by the strike was only 2,852 tons. Bv the end of August production had grown to nearly 30,000 tons for the month. It was more than double that, or 70,000 tons, in September, and as against an estimated production of 90,000 tons for October there was an actual production of 103,183 tons for that month. The number of men at work increased from month to month. Only 107 men remained at work on July 1. By Aug. 31, mines in the strike area had 602 men on their rolls. This number had grown to 1,010 on Sept. 30 and on Oct. 31 there were 1,419 men on the rolls of the company in the strike area. Another sign of improvement was seen in the fact that 38 mines out of 44 forced to close down when the strike began had resumed operation. Thus it will be seen that there was a 50 per cent increase in production in the strike region in October over the month of September, despite the fact that there was still consideable violence in the trouble zone.

ALASKA

According to a statement made by **G. D. Beymer,** who has spent the spring in Anchorage, he has just discovered a mountain of coal, unexplored and not charted on the geological map. He says, "The mountain of coal is a mile long, with seams from 50 to 100 ft. thick and traceable for half a mile.

A better grade of coal is now being mined from the coal fields in the vicinity of Nenana than at any previous time, according to a statement made by **Woodbury Abbey,** of the Alaska survey, who has returned from the interior. The biggest operators are located near Healy, and the completion of the bridge across the Nenana river this summer has opened a route of transportation from Healy to Nenana, according to Mr. Abbey As with other industries of the interior there can be no extensive development until the completion of the government railroad.

BRITISH COLUMBIA

The transfer of an area of 3,000 acres of coal bearing land situation in the **Cedar District, Vancouver Island,** for a figure aggregating a quarter of a million dollars is authentically reported. A number of British Columbia business men are the owners. While the identity of the buyers has not been disclosed, it is understood that they are undertaking to commence development without loss of time. The land carries bituminous coal of the same quality as that produced by other Vancouver Island coal mines.

The City of Vancouver has taken umbrage over the cost of coal to the consumer. Inquiries made are said to have led to the establishment of the fact that lignite can be imported to the Pacific coast from the Province of Alberta and sold cheaper than is bituminous of Vancouver Island and the interior British Columbia fields. The investigation now is in progress. Retail dealers have filed a statement of their case. They point first to their investment in Vancouver which runs to about $2,000,000 and dwell on the unfairness of the municipality entering into the business in competition with them. They then show their costs to be $13.41 per ton. The quality of the Alberta coal in comparison with that of this Province is attacked and it is asserted that the City would have to figures on selling run-of-mine coal at $11.36 at the cheapest, while this coal is sold by them at $11.50, so that there would be a saving of only 14c. a ton for an inferior quality of fuel.

Negotiations are pending between a syndicate representing the British Admiralty and the owners of the **Ground Hog coal properties,** 150 miles from Hazelton, B. C. for the purchase of the largest smokeless steam coal deposit in the world—2,000 sq.mi.

Traffic News

In a complaint to the I. C. C. the **United Verde Extension Mining Co.,** of Jerome, Ariz., attacks the rate of $8.20 a ton on mine-run coal from Dawson, N. M., to Clarksdale, Ariz., from June 25, 1919, and June 8, 1920, on the ground that it is unreasonable and unjustly discriminatory and unduly preferential to mines at Gallup, N. M. A reasonable rate and reparation are asked.

The Tuffli Bros. Pig Iron & Coke Co., of St. Louis, in a complaint to the I. C. C. attacks as unjust and unreasonable the rates on a car of smithing coal from Douglas, W. Va., to Los Angeles, Cal., reconsigned at Chicago to Oakdale, Cal., and thence to Los Angeles, because such reconsignment was not accomplished at the through rate of $12.10 from Chicago for final destination. A cease and desist order and reparation are requested.

The I. C. C. has scheduled for hearing the following coal cases.

Lehigh Coal and Navigation Co. vs. the Director General as agent, Dec. 17 at Washington. **Merchants Coal and Coke Co.** and **the Ideal Fuel Co. Inc.** vs. the Director General as agent, at Chicago, Dec. 1.

In a complaint to the I. C. C. the **National Fireproofing Co.** of Pittsburgh attacks the rate of 70c. per ton on coal in the Clinton district to Brazil, Indiana as unjust and unreasonable, and asks for a rate not in excess of 50c. and reparation.

The Commission has assigned for hearing Dec. 20 at Louisville the compaint of the **West Kentucky Coal Bureau** vs. the Illinois Central R.R.

The I. C. C. has scheduled for hearing at Galesburg, Ill., on Nov. 29, the matter of **coal rates from Illinois to Michigan.**

Ohio operators, through the various operators' associations, have lodged a protest with the I. C. C against the recent amendment to Service Order 20, which changes the definition of what constitutes a coal car. The effect of the amendment as to the southern Ohio field is to release thousands of cars from the coal trade. Out of approximately 26,000 cars on the Hocking Valley R.R., the Toledo & Ohio Central, Zanesville and Western and Kanawha and Michigan, only 2,000 are hopper cars. All the remainder are flat-bottom cars and thus can be used for any purpose.

The Indian Creek & Northern R.R., which is being built by the New England Fuel & Transportation Co., will, within a short time, be completed in the Monongalia County field of West Virginia.

In a complaint to the I. C. C. the **P. Koenig Coal Co.,** of Detroit, attacks as unreasonable the switching charges on coal to its yard in the city of Detroit on the ground that it is not accorded the Detroit rates.

The hearing in the complaint of the **Avella Coal Co.,** scheduled for Pittsburgh Nov. 29 has been postponed to a date to be fixed later.

The commission has suspended until March 24, 1921, operation of the **proposed cancellation of rates** on coal from mines in Kentucky and Tennessee **to Atlanta via Cartersville, Ga., and the Western & Atlantic Ry.** The proposed cancellation would force the payment of an additional switching charge of 30c. per ton less $2.50 per car by the consumers located more than three miles from the point of interchange of the L. and N. R.R. with the Southern Ry.

Industrial News

Minneapolis, Minn.—The shortage of coal and the high prices have given some impetus to the development of peat in this city. A plant has been completed in Minneapolis, for producing pulverized peat and it has been tested in a local office building. It is claimed that it nearly equals steam coal, and it is priced at about half the cost.

New York, N. Y.—Coale & Co., Inc., has moved as of Nov. 18 from 149 Broadway to its new offices on the fifth floor of 11-13 Stone Street, New York.

Detroit, Mich.—Morse Chain Co., Ithaca, N. Y., manufacturers of the Morse "rocker-joint" silent chain, has established a Detroit branch factory. The company will continue the main plant at Ithaca. The Detroit branch will be under the general management of F. C. Thompson, with F. M. Hawley as chief engincer and C. B. Mitchell as factory manager. Sales and engineering offices are located at corner of Eighth and Abbott Streets.

Detroit, Mich.—The Chicago Pneumatic Tool Co. announces the removal of its Rock Drill Plant from 864 East 72 St., Cleveland, Ohio, to the company's Boyer Pneumatic Hammer Plant at 1301 Second Blvd., Detroit. Location of the company's Little Giant Air Drill Plant at 1241 East 49 St., Cleveland, remains unchanged.

Philadelphia, Pa.—The Cement Gun Co. announces the removal of its main office from Allentown to Cornwells, Bucks Co., Pa., a suburb of Philadelphia.

Norfolk, Va.—Rolling stock now coming into use by Eastern coal-roads is far beyond the unit capacity contemplated a few years ago and the latest cars now being built in large numbers, each carry 120 tons whereas 60 tons capacity was formerly the limit. To meet this situation the Norfolk & Western Railway Co. have now contracted for another Wellman-Seaver-Morgan, Cleveland-made, car dumper to be installed at its terminal at Lamberts Point, Norfolk, Va.

Personals

A large number of guests attended the recent dinner at Holden, W. Va., given by **A. R. Beisel,** general manager of the Island Creek Coal Co. complimentary to **T. B. Davis** of New York, president of the company, and to **J. D. Frances** of Huntington and **R. S. McVeigh** of Cincinnati, vice presidents. There were also present: **W. O. Percival,** general superintendent; **W. L. Davis,** assistant to the general superintendent; **F. S. Landstreet,** vice president of the Mallory Coal Co.; **W. J. Crutcher,** store manager; **J. J. Foster,** auditor; **G. V. Hite,** superintendent River Department; **Robert Crutcher,** assistant store manager, and **W. R. Dudley,** chief engineer.

The resignation of **E. C. Morse,** Director of Sales, has been tendered to the War Department, effective Dec. 31, or earlier.

Mr. Morse will return to civil life from which he was drawn early in the war by the Construction Division of the Army, later transferring to the sales organization of the War Department. He has not yet decided upon the line of work he will follow when he leaves the Government service. He will be succeeded by **Lt. Col. E. S. Hartshorn,** of the General Staff.

William H. Bowers of the Union Colliery Co., DuQuoin, Ill., has resigned to accept a similar position with the Willis Coal & Mining Co., operating at Willisville. **Thomas Hunter,** also formerly an employee of the Union Colliery Co., is now with the Willis people.

Arthur Neale, general manager of the coal properties in Illinois of the Pittsburgh Coal Co. until the sale of those properties to the Illinois Coal & Coke Co., has accepted the position of assistant manager of the Pittsburgh Coal Co. Mr. Neale will make his headquarters in Pittsburgh.

Herbert H. Calvin, railroad fuel agent for the United States Fuel Co. of Salt Lake City, has been appointed general sales manager of the company. Mr. Calvin, who has been interested in the coal business for the past five years, is a son of E. E. Calvin, vice-president of the Union Pacific R.R.

Walter H. Clemmency of Clemmency, Hammer & Co., North American Building, Philadelphia, spent ten days recently on a tour of the mines in Clearfield, Cambria and Westmoreland Counties and also to the Fairmont district of West Virginia.

The Whitney Coal Mining Co., Land Title Building, Philadelphia, announce the appointment of **Gilbert F. Foote, Jr.,** as sales manager.

W. J. Alexander, with a big retail yard in Philadelphia, was on a recent visit to the Markle anthracite properties in the vicinity of Jeddo, Pa.

The retirement of **Judge McGee** as fuel administrator for Minnesota is announced, and **Chairman Mills,** of the Railroad and Warehouse Commission, will carry on such work as pertains to the position hereafter. The Judge has spent a considerable amount of time in the East urging shipments forward to the Northwest, and watching deliveries to the lower ports.

C. H. Diffenderffer, Philadelphia, president of The Blair-Parke Coal Co., was in Fairmont recently.

M. D. Wilson, of The Wilcord Coal Co., has returned from Washington, D. C.

Arthur R. Wellwood has recently become identified with the Enginering Staff of the Superpower Survey with offices at 709 Sixth Avenue, New York City.

Charles E. Lucke, professor of mechanical engineering at Columbia University, and a graduate of the class of 1902, has been made a member of the fuel committee of the American Society of Mechanical Engineers, which is conducting a nation-wide research into fuel conditions.

Ivan R. Butler has opened an office in the Marine Trust Building as Buffalo representative of the Northeastern Coal & Export Corporation of Montreal. He was at the head of the Century Coal Co.'s Buffalo office till it was closed, after which he enlisted. **Roy S. Bain** is at the head of the Cleveland office of the Northeastern Co.; **Harry F. Butler,** vice president, manages the Syracuse office.

Clem Richard, coal operator of Terre Haute, Ind., state senator-elect, tendered his resignation recently as chief of the board of safety that he may serve in the legislature without other official duties.

F. A. Thrasher, one of the best-known young business men in Jackson, Miss., has accepted the position of manager of the Morrison Coal Co., and has assumed his duties.

Captain J. Frank Tillery, secretary of the Pittsburgh Coal Exchange attended the annual convention of the Ohio Valley Improvement Association in Paducah, Ky., as delegate of the Pittsburgh Chamber of Commerce.

The Ralco Coal Co. of Buckley, W. Va., which was organized not long ago, has perfected its organization with the election of the following officers: **M. B. Hoffman,** president and general manager; **D. D. Ashworth,** vice president; **A. P. Grass,** secretary and treasurer.

C. R. Cassidy, formerly connected with the Pittsburgh office of the Pittsburgh & Bessemer Coal Co., has been made manager of the Columbus office of the company following the resignation of D. D. Davidson.

F. S. Davidson, formerly sales manager of the Columbus office of the Pittsburgh & Bessemer Coal Co., has been made sales manager of the Packard Coal Mining Co., of Columbus, which operates mines in the Hocking Valley field.

Robert S. Wheatley of Salineville, a coal miner for 25 years, has been named director of five schools for miners, established in the eastern Ohio district. The Federal Board of Vocational Training has established the schools for foreign-born miners.

Publications Received

Coke-Oven Accidents in the U. S. Issued by the Bureau of Mines, Department of the Interior, by William W. Adams. Pp. 25; 6 x 9 in. Tables and statistics showing coke-oven accidents in this country during the calendar year 1919.

Coking Industry of the Pacific Northwest.—Issued by the Engineering Experiment Station, University of Washington. Bulletin 9. Pp. 35; 6 x 9 in.; illustrated.

Trade Catalogs

Gunite Slabs.—The Cement Gun Co., Inc., Cornwells, Pa. Pp. 30; 6 x 9 in.; illustrated. Covering report on tests of Gunite Slabs.—Advertiser.

Blaw Bulldog Buckets. Blaw Knox Co., Pittsburgh, Pa. Folder; 3½ x 7 in.; illustrated. Cuts and specifications of various types of clamshell buckets.—Advertiser.

Aurora Centrifugal Pumps. Aurora Pump & Mfg. Co., Aurora, Ill., Bulletin 100. Pp. 23; 8 x 11 in.; illustrated. Showing designs of standard types of centrifugal pumps.

Association Activities

Indiana Bituminous Coal Operators' Association

The association has appointed a committee to co-operate with the United States district attorney for Indiana in the maintenance of fair practices and fair prices for coal. M. L. Gould of Indianapolis, president of the association, and P. H. Penna, of Terre Haute, secretary-treasurer, were named for the purpose. They also were authorized to call in other members to assist them. The action of the association was in conjunction with a resolution passed at the recent national meeting of operators in Cleveland. Mr Penna has refused to say what the first steps will be in the "fair price fixing" authorized by the association. It is expected he will soon confer with the district attorney to make primary plans for the work.

Pittsburgh Vein Operators' Association

The Fair Practice Committee organized at Cleveland, at the time of the recent meeting of the National Coal Association, and other operators, recently held a meeting to review the situation under its supervision, particularly as regarding supply of domestic coal for northeast Ohio cities.

It was found that the poor car supply and obligations of small operators in other directions had interfered somewhat with the program for supplying this coal, which was promulgated some time ago. At the suggestion of the committee, certain shippers took steps which have resulted in taking care of the immediate situation and it is gratifying that even during the recent cold weather retail dealers have been supplied with coal to meet their requirements. This phase of the situation is believed to be thoroughly in hand.

The Fair Practice Committee has not received any complaints regarding excessive prices and the feeling prevails that dealers have individually reached the conclusion that they are being charged prices which are reasonable and which enable them to fill their orders at prices which are also fair to the consumer. This conclusion is confirmed by the fact that retail coal has sold during the past week, or ten days at prices under $10.

Coming Meetings

The Engineers' Club of Philadelphia will hold a special meeting at the Club House, Friday, Dec. 3, at 8.15 p.m., to discuss the subject of the use of powdered anthracite and the recovery and use of "river coal." Secretary, C. E. Billin, 1317 Spruce St., Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

West Virginia Coal Mining Institute will hold its annual meeting Dec. 7 and 8, at McLure Hotel, Wheeling, W. Va. Secretary, R. E. Sherwood, 1001 Kanawha Bank Building, Charleston, W. Va.

Coal Mining Institute of America will holds its annual meeting Dec. 8, 9 and 10, 1920, in the Chamber of Commerce Auditorium, Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

Taylor Society will hold its annual meeting Dec. 2, 3 and 4 in the Engineering Societies Building, 29 West 39th Street, New York City. This society tends to promote the science and the art of administration and of management. Managing director, H. S. Person, 29 West 39th Street, New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Mechanical Engineers' annual meeting will be held in the Engineering Societies Building, 29 West 39th Street, New York City, Dec. 7 to 10 inclusive. Secretary, Calvin W. Rice, 29 West 39th Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Obituary

Herbert M. Wilson, general manager of the Associated Insurance Companies and a former chief engineer of the United States Bureau of Mines, died at his home here Nov. 25 of pneumonia. He had been ill but a few days.

Mr. Wilson was born in Glasgow, sixty years ago. He was graduated from Columbia University in 1881 and spent some time in Mexico on railway engineering projects.

HERBERT M. WILSON
Former Chief Engineer, U. S. Bureau of Mines

For several years he was connected with the United States Geological Survey and was engineer in charge of the bureau of mines from 1910 to 1914. He was the author of many articles on engineering.